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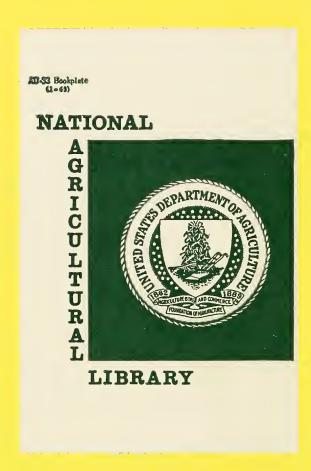
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# BRYANT SWAMP WATERSHED

ENVIRONMENTAL STATEMENT





#2307209

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Bryant Swamp Watershed
Bladen County, North Carolina

Final Environmental Statement

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Prepared by:

UNITED STATES DEPARTMENT OF AGRICULTURE
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#### USDA ENVIRONMENTAL STATEMENT

Bryant Swamp Watershed
Bladen County, North Carolina

Prepared in Accordance with Sec. 102 (2) (C) of P.L. 91-190

#### Summary Sheet

- I Draft ( ) Final (X)
- II Soil Conservation Service
- III Administrative (X)
  - IV Brief Description of Action: Bryant Swamp Watershed, located in the southwestern part of Bladen County, North Carolina, has an area of 16,200 acres. Project measures include land treatment; 22.9 miles of stream channel work; and six grade-control structures.
  - V Summary of Environmental Impact and Adverse Environmental Effects:
    Reduce flooding on cropland, forested alluvial flood plain, and in the
    town of Bladenboro; improve soil profile drainage; reduce erosion;
    create 40 acres of wildlife food and cover; provide better mosquito
    control; create 12 jobs during construction and eight jobs for the
    life of the project; reduce value of 50 acres of wildlife wetland
    habitat; damage one mile of fishing stream; increase sediment during
    construction; clear 95 acres of forestland; and damage 90 acres of
    forestland.
  - VI Alternatives Considered: An accelerated land treatment program only; floodwater retarding structures; system of levees with pumping stations; construction of off-stream channels; clearing and snagging; vertical drainage wells and water-control structures; flood proofing; less intensive land use; more intensive land use; flood plain zoning; flood insurance; public acquisition of flood prone lands; investment of project funds and distribution of interest to landowners; and do nothing.
- VII Agencies and Others From Which Written Comments Have Been Received:
  U. S. Department of the Army, Corps of Engineers; U. S. Environmental Protection Agency; U. S. Department of Health, Education, and Welfare; U. S. Department of the Interior; U. S. Department of Transportation; N. C. Department of Administration; N. C. Department of Natural and Economic Resources (Offices of Forest Resources and Water and Air Resources and the Wildlife Resources Commission); Sierra Club Horace Kephart Group, League of Women Voters of North Carolina; and Vincent J. Bellis.

## Summary Sheet

VIII The Draft Environmental Statement Was Made Available to CEQ and the Public on: June 29, 1973.

The Final Environmental Statement Was Made Available to CEQ and the Public on:

#### USDA SOIL CONSERVATION SERVICE ENVIRONMENTAL STATEMENT

Title of Statement: The Bryant Swamp Watershed Project,

Bladen County, North Carolina

Type of Statement: Draft ( ) Final (X)

Date: May 1974

Type of Action: Administrative (X)

Statement:

#### 1. Description:

Authority for Project: Federal assistance through Public Law 566, 83d Congress, 68 Stat. 666, as amended

Sponsoring Local Organizations: Bryant Swamp Flood Control

Corporation
Town of Bladenboro
Bladen Soil and Water Conservation

District

Purpose of Project: The purposes of the project are to provide flood prevention and drainage of 4,090 acres of crop and pasture land and to reduce erosion on 890 acres of crop and pasture land through land treatment and channel work.

Project Measures: The project proposes conservation land treatment measures on 2,190 acres of crop and pasture land; 22.9 miles of channel work, and six grade-control structures.

#### Environmental Setting:

Physical Data: Bryant Swamp Watershed, situated in Bladen County, in southeastern North Carolina, covers an area of 16,200 acres. The town of Bladenboro is located in the central part of the watershed. Elizabethtown (population 1,400), the county seat of Bladen County, is ten miles to the northeast and Lumberton (population 14,000) is ten miles to the northwest. Bryant Swamp Canal (a part of the Pee Dee River Basin) originates in a large densely forested pocosin (upland swamp) northeast of Bladenboro and flows southwestwardly to Big Swamp.

Population of the watershed is estimated to be 2,500. The make-up of the population is 1,100 farm, 800 urban, and 600 rural non-farm.

#### Environmental Setting

There are 4,090 acres of crop and pasture land with poor surface and internal drainage. Channels serving as outlets for this land are inadequate for the on-farm drainage systems. This same land is subject to overflow from both channels and forested pocosins during periods of excessive rainfall.

Portions of the downtown section of Bladenboro sustain flooding almost annually. Streets, public roads and bridges suffer minor flood damages.

Accelerated sheet erosion occurs on 890 acres of well-drained land in the lower portion of the watershed. Sediment from the gently sloping land near the drainageways is deposited in field ditches impairing drainage.

The watershed is in the middle coastal plain physiographic province. Average temperatures range from 46 degrees in January to 80 degrees Fahrenheit in July. The average frost-free season is 220 days. Annual rainfall averages 46 inches. The rainfall is fairly well distributed throughout the year. The highest average monthly rainfall occurs in July (slightly more than six inches) and the lowest average occurs in January, October, or November (slightly less than three inches).

The watershed includes three significant soil areas composed of: (1) Coxville, Dunbar, Lynchburg, Goldsboro, Chipley, and Albany series; (2) Lynn Haven and Leon soils; and (3) Hyde soils.

Most of the open agricultural soils are in the Coxville, Dunbar, Lynchburg, Goldsboro, Chipley, and Albany series. These soils are acid and range in natural drainage from poorly drained to moderately well drained.

In the edge of the large forested pocosins are flat areas of Lynn Haven and Leon soils. These soils are wet, sandy and very acid with a black to dark gray sand surface of 4 to 15 inches over white sand. Below 20 inches, the material is a firm brown sand. These soils are usually found with a cover of gullberry, buckleberry, and pine.

Within the forested pocosins are extensive areas of Hyde soils. The soil is acid throughout. The surface soil, 12 to 24 inches, is a black loam underlain by brownish gray clay loam or silty clay. The remaining forested soils are predominantly sand underlain with a fairly thick layer of organic material.

Elevations range from 130 feet mean sea level around the rim of the watershed down to 85 feet mean sea level at the outlet.

Geologically, the watershed is underlain by the Black Creek formation of late Cretaceous Age. The principal ground water aquifer is located in this 300 - 400 foot thick formation. In the Bryant Swamp Watershed, the Black Creek formation receives water only as discharge occurs. Wells screened in 50 feet or more of sand, and properly developed, may yield six to eight gallons per minute per foot of drawdown. The few wells that tap the Black Creek formation are the only discharge points in the watershed for this aquifer.

Surficial deposits consisting of sand and sandy clay cover the Black Creek formation. These surficial deposits range in thickness from about 10 to 30 feet and furnish water to many small domestic wells and dug ponds. The static water level in many of the wells is within five feet of the land surface. The surficial aquifer is fully charged at the present time.

Mineral resources consisting of sand and gravel deposits are located within the Bryant Swamp Watershed area. However, there is no known development of these minerals at the present time.

Land uses of the watershed are 4,180 acres of cropland (25.8 percent); 830 acres of pasture (5.1 percent); 1,050 acres of urban and built-up areas (6.5 percent); 470 acres of other (2.9 percent); and 9,670 acres of forestland (59.7 percent). The majority of the forested land is located around the perimeter and upper portion of the watershed. Present trends in land use change are expected to continue in the future. Consolidating small fields into larger ones and increasing livestock production will bring about land use change, principally in acres of pasture and forestland. By the time project installation is complete, land uses are estimated to be 4,120 acres of cropland (25.4 percent); 1,170 acres of pasture (7.2 percent); 1,050 acres of urban and built-up areas (6.5 percent); 685 acres of other (4.2 percent); and 9,175 acres of forestland (56.7 percent).

Higher value crops are grown on the better drained land. Most of the urban and built-up areas are located in and around Bladenboro, which is located in the center of the watershed.

The main stream, from its origin to Bladenboro (approximately four miles), extends through a very gently sloping area of forested wetland with little or no defined flood plain. There is no evidence of channel work by excavation having been done along this portion of the main stream, except in the vicinity of road crossings. The stream channel is poorly defined and in some areas there is no discernible run.

From Bladenboro downstream to the outlet into Big Swamp (approximately four miles), the main stream flows through a defined flood plain which becomes more pronounced as it progresses toward the outlet. The stream channel through this area is well defined, having

#### Environmental Setting

been excavated about 35 years ago. The flood plain varies in width from about 500 feet to 1,500 feet. Essentially all of the alluvial flood plain is forested, with a few small areas fenced for native grass pasture and forestland grazing. Most of the merchantable timber in the flood plain has been harvested in recent years.

There are approximately 3.7 miles of laterals that have no defined channels. The remaining 13.2 miles of laterals are previously modified channels.

The main stem is a perennial stream (flows at all times except during extreme drought). The North Carolina Department of Natural and Economic Resources has classified this stream as "C" swamp waters (suitable for fish) down to State Road 1133 and "D" swamp waters (suitable for agriculture) from State Road 1133 to the outlet. Lateral No. 11 (see project map) is an intermittent stream (continuous flow during some seasons but no flow during other seasons). The remaining laterals are classified as ephemeral streams (flows only during periods of surface runoff).

Limited data is available on the water quality of Bryant Swamp. Nine samples each were taken below the effluent discharge points of Bladenboro Cotton Mills and Bladenboro's waste treatment plant during the period June 1969 to August 1973. Dissolved oxygen had a range of  $0 - 5.2 \, \text{mg/l}$ , giving a  $0 - 54 \, \text{percent}$  saturation. The 5-day BOD is recorded for only one sample at each station. Adjusted to  $20^{\circ}\text{C}$ , these recordings were 7.0 and 4.5 mg/l respectively. The fecal coliform count ranged from  $200 - 15,000/100 \, \text{ml}$  below the cotton mill and  $100 - 2,000/100 \, \text{ml}$  below the waste treatment plant.

According to Wilder and Slack in <u>Chemical Quality of Water in Streams in North Carolina</u>, both Big Swamp and Lumber River have a hardness range of 0 - 10 mg/l of CaGO<sub>3</sub>. The range for nitrates NO<sub>3</sub> in mg/l are 1.0 - 1.9 for Big Swamp and 0.0 - 0.5 for Lumber River. Chloride ranges from 6.0 - 9.9 mg/l in Big Swamp to 3.0 - 5.9 mg/l for the Lumber River.

There are approximately 75 acres of Type 7 wetland habitat (U. S. Fish and Wildlife Service Circular 39) described as wooded swamps that are flooded with up to one foot of water at different times throughout the year. Approximately 50 acres of this type are located in and near the town limits of Bladenboro. The remaining 25 acres are located in the lower reaches of the project area above State Road 1128.

Economic Data: Except for public roads and streets, all the land in the watershed is in private ownership. The economy is largely dependent on agriculture and agriculturally oriented businesses. The major crops are tobacco, corn, small grain, and soybeans.

Peanuts and sweet potatoes are of lesser importance in terms of acreage. A few farmers engage in commercial livestock production. These enterprises are mainly for production of high quality beef cattle, a significant proportion of which is marketed as breeding stock. These operations require large capital investments. Livestock production accounts for about one-fourth of gross farm income.

There are 140 farms in the watershed. They vary in size from small units to a maximum of about 500 acres. The average size of farms is considered to be about 90 acres. According to the 1964 Census of Agriculture, the average value of farms in the area was approximately \$20,000. Based on recent selling prices of farm land in the area, the current value of a 90-acre farm would be in the range of \$35,000 to \$40,000.

Present yields per acre for the principal crops grown in the problem area include: tobacco - 2,000 pounds; corn - 80 bushels; peanuts - 1,500 pounds; oats - 46 bushels; and soybeans double-cropped - 26 bushels.

The value of crop and pasture land ranges up to \$500 per acre and the forestland is valued between \$100 to \$200 per acre. The urban and commercial land in and around Bladenboro ranges from \$1,000 to \$1,500 per acre.

The watershed is well served by transportation facilities. The Seaboard Coast Line Railroad passes through the watershed, connecting with the main north-south rail lines near Lumberton, and extends eastward to Wilmington, a major seaport terminal. There is also a good system of state highways providing easy access to markets, trade centers, and major U. S. and interstate highways nearby.

Bladen County is designated under the Economic Development Act as an area of chronic unemployment and underemployment. Evidence of this condition is apparent in the watershed. The county's rate of unemployment (from 1964 to 1970) has ranged from a high of 9.6 percent (1964) to a low of 5.2 percent (1969). The 1970 unemployment rate was 6.5 percent. Labor force data shows that the civilian work force in 1970 was 8,710, while only 8,140 persons were gainfully employed. Manufacturing employed 2,390 (29 percent); non-manufacturing employed 2,860 persons (35 percent); agriculture employed, with some seasonal fluctuations, 1,950 (24 percent); and all other non-agriculture employed 940 (12 percent).

The county had a per capita income of \$2,196 in 1970. In the same year, North Carolina's per capita income was \$3,208, and the United States had a per capita income of \$3,910. Poverty is further indicated by the fact that in 1970 approximately 30.5 percent of the households in the county had incomes less than the poverty level as

#### Environmental Setting

defined in the U. S. Commerce Department's 1970 population census. Based upon estimates of income sources for Bladen County, agricultural industries (SIC Codes 01, 07, 08, and 09) generated about 30 percent of the total personal income for the county in 1970. This amounted to \$57,692,000 according to the North Carolina Department of Revenue, Tax Research Division. The remaining 70 percent of the county's total personal income was generated by manufacturing and other nonfarm industries.

Fish and Wildlife Resources: Existing fish populations are influenced by movements of fish upstream from Big Swamp and are located primarily in the lower two miles (below State Road 1178) of the main channel. Game fish species present are: warmouth bass, redfin pickerel, and bluegill. The fishery resource is affected by the presence of domestic pollution from Bladenboro. Periodic fish kills have been reported downstream from Bladenboro. Due to the lack of permanent water, the laterals are not considered capable of supporting a fishery resource. Because of the pollution, size of the stream, and limited access, the use of the fishery resource within the watershed is insignificant. The new sewage treatment plant presently under construction at Bladenboro will reduce the domestic and industrial pollution. With proper management, this should allow the section of Bryant Swamp below State Road 1178 to regain its status as a good fishery resource stream as indicated by D. E. Louder's publication: Survey and Classification of the Lumber River and Shallotte River, North Carolina, dated 1962.

The fishery resource in Big Swamp is rated as one of the better fishing streams in the Lumber River Basin.

Game resources in the watershed consist primarily of upland species, Deer, quail, rabbit, and squirrel are abundant and hunting pressure on these species is heavy. The mourning dove, American woodcock, and various fur bearing animals are found in the watershed. Waterfowl habitat consists of approximately 50 acres located between North Carolina Highway 242 and State Road 1133, within or adjacent to the town limits of Bladenboro. Since this acreage is small and mostly located near a population center, it is generally of low value and receives only limited use by waterfowl populations. However, because of its location next to the population center of Bladenboro, it has value as a sanctuary for many forms of wildlife. An additional 25 acres of wetland habitat exists along the main channel between Bladenboro and State Road 1128. According to a report by the North Carolina Wildlife Resources Commission, waterfowl hunting pressure is light with an estimated nine hunter-days annually. Deer, bear, waterfowl, alligators, and various other wildlife are found in Big Swamp. There are few other areas of continuous forestland swamp in North Carolina as large or relatively unspoiled as Big Swamp.

Recreational Resources: Recreational resources within the watershed are limited primarily to areas set aside for team sports. Lake Waccamaw, located 30 miles to the southeast, outside the watershed, provides an opportunity for all types of water-based recreation. Bladen Lake State Forest, White Lake, and Singletary Lake, located 20 miles to the northeast, provide camping facilities as well as water-based recreation.

Archaeological and Historical Values and Unique Scenic Areas:
According to the National Register of Historic Places, there are no known places of historic value located within the watershed. The North Carolina Department of Art, Culture and History, Office of Archives and History, and the Research Laboratories of Anthropology at the University of North Carolina in Chapel Hill have no record of any places of historical or archaeological value or unique scenic areas being located in this area.

Soil, Water, and Plant Management Status: The cost-price squeeze caused by high mechanization expenses has forced the consolidation of small fields into larger ones and small farms into larger units. This trend is expected to continue. As this consolidation continues, it is expected that 495 acres of forestland will be converted to crop and pasture land. Most of this forestland is located around the perimeters of existing fields. There will be an estimated net decrease in cropland of 60 acres. Pastureland will undergo a net increase of about 340 acres. The remaining acres, converted from forestland and cropland will be converted to other uses, such as wildlife, recreation, and home sites.

Open ditch drainage was installed when the land was cleared for cultivation. Most of these early ditches are now inadequate for both drainage and floodwater discharge. Low quality crops, higher production costs, and low net returns are all results of poor drainage within the root zones.

The soil and water conservation district has assisted 53 farm operators (38 percent of the total) in carrying out one or more conservation measures on their farms. Soil and water conservation plans have been prepared on 36 farms or 26 percent of the 140 farms in the watershed. These 36 farms represent 58 percent of the crop and pasture land. The above figures indicate the problems with getting land treatment measures installed in the watershed. Inadequate outlets exist for on-farm drainage. Wet field conditions force the operators to base their farming practices, such as cropping systems, crop residue management and land preparation solely on the moisture content of the fields most of the time. This problem is further aggrevated by absentee landowners who lease their land on a yearly basis and farmers who work off the farm part-time.

#### Environmental Setting

It is estimated that 43 percent of needed land treatment practices are applied to date.

The North Carolina Office of Forest Resources, in co-operation with the United States Forest Service, through the various federal-state co-operative forestry programs, is providing forest management assistance, forest fire prevention and suppression, distribution of planting stock, and forest pest control assistance to private landowners in the watershed area.

#### Water and Related Land Resource Problems:

Land Treatment: According to soil surveys, 4,090 acres of crop and pasture land have problems caused by excess water which must be overcome before reasonable conservation and management practices can be utilized. A system of open drains was installed when the land was originally cleared for cultivation. Most of these early ditches are inadequate for both drainage and floodwater discharge required for modern, efficient agriculture. Modern equipment and consolidation of small fields are forcing the need for more efficient on-farm drainage systems, whereby tile drains are used in conjunction with relocated surface drains.

Even with on-farm drainage systems properly installed, efficient application of lime and fertilizer, conservation cropping systems, and crop residue management are needed to fully develop the productivity of the soils.

Sheet erosion is a problem on only a small part (890 acres) of the total watershed as most of the land is nearly flat. It is estimated that there are 8,775 tons of soil lost to erosion annually on this land. Some erosion occurs where surface water enters the channel and on gently sloping land.

Increasing use of larger equipment has required larger sized fields with fewer open drains. There is need for conversion to tile drains in lieu of field ditches.

Floodwater Damage: Flooding is a significant problem to both the agricultural and urbanized areas of the watershed. An estimated 4,090 acres of crop and pasture land (valued at about \$500 per acre) suffer flood damage. Damage stems from inability to remove surface runoff from abnormally heavy rainfall and from stream channel overflow along low-lying edges of fields. Direct flood damage to crops and pasture is estimated at \$26,500 annually.

A portion of the downtown business section of Bladenboro sustains flooding almost annually. Twenty-two stores and other business establishments are subject to flooding from the 100-year frequency storm. Three damaging floods have occurred within the last ten years.



Bladenboro's Main Street was under water during the flood of October 5, 1964.



Typical section of channel upstream from SR 1178 showing debris filled channel.



Typical sction of channel between SR 1128 and SR 1178 showing debris filled channel.



Debris is found in the main channel below SR 1128.

The largest one, in October 1964, resulted from a storm approximating the 100-year frequency and caused damage estimated at \$41,000 to businesses in Bladenboro. Lesser floods occurred in June of 1966 (estimated damages - \$5,500) and February 1971 (estimated damages - \$10,000). Records in the Bladenboro Town Office indicate that a flood comparable to the October 1964 flood occurred in 1924. Local businessmen reported that some flooding of streets and low places occurs once or twice each year on the average, but that damages from these small floods are minor and are limited mostly to inconvenience. Flood stages for the larger storms are low but cover a large area of the business section. Maximum flood depth over any store floor was found to be 1.7 feet with most stores having only a few inches of flooding. Flooding of residences is limited to shallow water over lawns and in a few small storage outbuildings. Average annual direct flood damage to urban property was estimated at \$8,100.

Minor flood damage to public roads, bridges, and atreets is experienced. Minor repairs to paved surfaces and regrading of unpaved roads are required after floods. Damages were estimated to average \$1,990 annually.

According to the executive chairman of Industrial Development of Bladenboro, industrial prospects have turned down Bladenboro as a building site because of the lack of sites free of drainage and floodwater problems.

The Bladen County Health Director stated that improper drainage adds to problems caused by pollution by creating odor nuisances, fly and mosquito breeding areas, and spread of human diseases. Poor drainage of surface water allows stagnant water to accumulate, which compounds these pollution problems.

Erosion Damage: Accelerated sheet erosion on about 890 acres of gently sloping land is a problem in the Bryant Swamp Watershed. The soils suffering damages are best suited for the production of flue-cured tobacco and other high cash yielding crops. Severe damage has already occurred on some of these acres and further erosion will decrease their suitability for the production of tobacco and other row crops. Farm income in the watershed would decrease if erosion forces this land to be relegated to a lower order of use, such as pasture or forestland. The eroding land is adjacent to the canal, tributaries, and other drainageways. Floodwater flows slowly over the forested flood plain below Bladenboro and flood plain scour is not a problem.

A careful field study did not reveal any examples of instability in recently modified channels. There are no critical sediment source areas in this watershed.

#### Resource Problems

Sediment Damage: The source of most sediment is the gently sloping cropland. This land is near the drainageways and delivery ratios are high. Sediment is deposited in field ditches causing impaired drainage. The damage is reflected in lower yields and increased difficulty in cultivating the land. Little or no land has been swamped to the extent that it has been put to a less intensive land use. Practically all of the open land is still used for crop and pasture.

Nearly all of the sediment delivered from the field ditches and roads is being deposited in the alluvial flood plain. The flood plain has always been wet and covered with bottom-land hardwood vegetation and infertile deposition has caused only minor damages in the past. The average annual turbidity of the water from Bryant Swamp entering Big Swamp is estimated to be about five milligrams per liter.

Problems Relating to Water Management: Poor drainage and flooding of the crop and pasture land is the basic water management problem in the watershed. It is caused by inadequate capacity and depth of channels that serve as outlets for on-farm ditches and drainage systems. These systems have been installed on most of the farms in the watershed. Floodwater and poor drainage combined cause high production costs and low quality crops, thereby providing low net returns for the farmers in the watershed.

Poor drainage makes it difficult and expensive to provide absorption fields for the septic tanks located in the rural areas which are not serviced by the town's present sewerage system. Bladenboro's storm sewer outlets do not operate effectively when floodwater builds up in the swamp adjoining the town. As the water from the storm sewers backs up, it combines with the floodwaters from drainage areas above the town, causing increased water damages.

<u>Irrigation</u>: Irrigation is limited almost entirely to tobacco. It is anticipated that there will be no large increase in irrigation in the future.

Municipal and Industrial Water: Municipal water for Bladenboro (population 800) comes from drilled wells. A textile plant uses water from a small tributary in its manufacturing process. Rural domestic water supplies come from shallow wells. Water for livestock is provided by small farm ponds and excavated pits. It is expected that the watershed will continue into the future as primarily an agricultural area. Based on this expectation, ground water should be sufficient to meet the future needs of the watershed.

Recreation: Most recreational facilities in the watershed are small private lakes and farm ponds used for fishing. There are several recreational parks for team sports. Lake sites are not available for other types of water-based recreation. This type of activity is

available within 20 miles of the watershed. Big Swamp offers some waterfowl hunting and excellent stream fishing. There has been no local interest shown in developing additional recreational facilities in the watershed.

Fish and Wildlife: The two primary problems relating to wildlife habitat in the watershed are lack of management and direct losses to this habitat base. There are approximately 425 acres in the lower reaches of the watershed that would, at one time, have met the requirements for classification as Type 7-Wooded Swamp (U. S. Fish and Wildlife Service Circular 39).

The basic problem relating to the fishery resource in the watershed is the limitation placed on the resource by the small stream size and low flow characteristics of Bryant Swamp Canal. Another problem is the domestic pollution from Bladenboro. However, the town is under a mandate from state authorities to modernize its sewerage treatment facilities which should help alleviate this problem. (The facilities are presently under construction.)

Economic and Social: A study of census records indicates that the number of farms in the area has decreased sharply since 1955. There has also been a corresponding increase in the size of farms during this period. This trend is primarily attributable to the cost-price squeeze that is felt more sharply in the smaller farm unit operations. Farm mechanization has also forced the consolidation of small farms into larger units. Mechanization and its accompanying improved efficiency has resulted in the displacement of many farm laborers. This problem is further aggravated by the fact that some of these displaced, underemployed laborers are untrainable and highly immobile. Many of the younger displaced residents are somewhat mobile. They migrate to larger cities before or shortly after finishing high school. Ill-prepared with the skills demanded by present day society, they perpetuate the growth of slums and blighted areas. This problem illustrates the need for more non-farm employment opportunities and the need to promote overall community development.

The so-called "family farm" is in a struggle for existence, and its death is inevitable without reduced production and harvest costs, and higher net returns. These changes must also be accompanied by a broader base of economic activity that can provide part-time employment for underemployed farmers and displaced farm laborers.

Under the domain of the Coastal Regional Commission, of which this county is a part, positive efforts are being made to reduce the outmigration from the region and to promote the balanced development of rural areas. 'The primary goal of the Commission is to narrow and eventually close the gap that exists between the region's per capita income and that of the nation. The initial strategies that will be

#### Resource Problems

employed toward this end will involve industrial development, education and manpower training, tourist promotion, and agricultural development. Programs which may be later considered, include the region's transportation system, capital resources, and housing and health needs."  $\underline{1}/$ 

#### Planned Project:

Vegetative land treatment measures to be installed will consist of 750 acres of conservation cropping systems; 640 acres of crop residue use; 100 acres of cover crops; 1,300 feet of field border plants; and 70 acres of minimum tillage. Forty acres of cleared rights-of-way will be planted to vegetation suitable for wildlife food and cover.

There will be 830 acres of cropland treatment with structural land treatment measures, such as 13,500 linear feet of surface drains; 17,500 linear feet of tile drains; 140 acres of land smoothing; and 1,000 linear feet of diversions.

The vegetated and structural land treatment measures are estimates, considering installation problems discussed under Resource Problems, that can be installed during the five-year installation period of the project.

Structural works of improvement consist of approximately 22.9 miles of stream channel work for flood prevention and drainage and six grade-control structures.

Road modifications include six streets in the town of Bladenboro, 23 public roads; 20 private roads, and three railroads. Most of the modifications will involve a grade-control drop of 0.5 to 2.0 feet. The grade-control drops at road crossings will permit channel bottoms to be constructed with flatter slopes and thereby insure stability of the channels.

Because of the steep grade, a grade-control structure will be required on Lateral No. 6 to insure a stable channel. Similar structures will be used, as needed, at the upper end of other laterals to stabilize the inlet into the new channel (see project map). Sand-cement bag riprap will be used to protect and stabilize the structures.

Of the 22.9 miles of channel work, 17.67 miles will be in previously modified channels and 5.23 miles will be in areas that have no existing defined channels.

<sup>1/</sup> Hansen, Niles M., Rural Poverty and the Urban Crises, Bloomington, Indiana, 1971, p. 125

Spoil material excavated from the channel will be placed on one side of all channels and will be utilized as a maintenance travelway. The travelway will not be continuous but will be accessible by private and public roads. Spoil disposal areas not used by the travelway will be seeded to vegetation suitable for wildlife food and cover. The travelway will be seeded to permanent grass. Pipe inlets are planned, as needed, to allow surface water to enter the channels without erosion and to provide a travelway for maintenance.

The effects of sediment created during construction will be reduced by the installation of sediment traps on the main channel between Bladenboro and the end of the channel work. The trap at the end of construction will be constructed first, and each succeeding trap will be constructed as channel work progresses to that location. These traps will be cleaned out, as needed, during and immediately after construction. They will also be cleaned out, as needed, as a part of maintenance performed by the sponsors. The need for cleaning is established as the time when the volume has been reduced to 20 percent of the original.

From Station 338+50 to Station 418+00 (see project map) works of improvement will consist of a floodway. This floodway will provide an adequate outlet for the increased peaks and decreased duration of flow caused by the project to a point where there will be no damage. Excavation of the floodway will be limited to that needed to remove trees, roots, and channel blocks within the 34-foot width. The width selected for the floodway is the approximate top width of the existing channel. The existing spoil on the north side of the channel will be shaped to form a travelway for maintenance. Construction will be from the north side to permit using the shade from the south side to reduce the need for future maintenance and to maintain existing stream overhead cover.

The estimated total installation cost for all land treatment measures is \$128,900. Installation cost of structural measures is estimated to be \$498,000.

#### 2. Environmental Impact:

Flood Prevention, Erosion, and Sediment: The project will provide protection from the five-year frequency storm. Storms of greater magnitude that the five-year frequency will cause some flooding; however, the reduction in degree and duration will materially reduce flood damages for these larger storms.

For the five-year frequency storm, channel work will cause an increase in the peak (maximum discharge in cubic feet per second) but a decrease in stage (elevations) at the junction of the main and Lateral No. 7. The peak for this storm will increase by 25 percent; while the stage will be 1.6 feet (19 inches) lower.

#### Environmental Impact

For the same storm there will be an increase in the peak and stage at the end of the channel work. The peak will be increased by 34 percent and the stage will increase by 0.4 foot (5 inches). This increase will not cause any downstream damage. Bryant Swamp has five percent of the drainage area of Big Swamp and the length of the watercourse is approximately 20 percent; therefore the increase in peak and stage would have no effect on flood peaks or stages in Big Swamp.

The average annual flood damages in Bladenboro will be reduced approximately 38 percent; but the degree of protection will not eliminate damages to present development. Future development will be limited in the area outlined by the flood plain map (Appendix C). This map will be published locally by the sponsors, at least annually, to inform the local people of the remaining flood hazard.

Flooding in the residential areas will be confined to shallow flooding of lawns and some storage buildings for the 100-year frequency storm, however, a few businesses will still experience flooding a few inches deep for the same storm.

The forested flood plain will still be flooded frequently. It is not anticipated that the use of this land or any other land will change as a result of this project.

Agricultural floodwater damages will be reduced 83 percent; while the non-agricultural damages will be reduced 38 percent. Flooding will be reduced on 4,090 acres of crop and pasture land. Floodwater damages to 22 stores and/or businesses will be reduced by the project. All of the 140 farms in the watershed will receive increased income from the project's installation and operation.

Erosion from the 890 acres of land with sheet erosion problems will be reduced by 2,900 tons annually. (A reduction of 35 percent.)

The average annual concentration of sediment entering Big Swamp is expected to be 13 mg/l for a period of one year during and immediately following construction of the project. This concentration level will decrease over a period of two to three years until the channel becomes stabilized. It is estimated that the future average annual concentration will level off at 8 mg/l. Studies, as reported in The Practice of Water Pollution Biology, 1969 article by the Federal Water Pollution Control Administration, indicate no harmful effects to the fishery resource for normal sediment concentration levels up to 25 mg/l. The estimated increase in average annual sediment concentration from 5 mg/l to 8 mg/l will increase the sediment concentration in Big Swamp by 0.15 mg/l. It is anticipated that this 0.15 mg/l would be immeasurable as far as any effect on the fishery of Big Swamp.

Existing information indicates that the ground water aquifer in Bryant Swamp is fully charged except for short periods during the dry season.

The proposed main channel will follow the existing channel and will be from 4 feet deeper at the upper end to 0 - 1.5 feet deeper from Bladenboro down to the end of construction. Any effect of the project on ground water will be confined to 1.5 to 4 feet below the surface. Ground water will be lowered at the channel by the depth of excavation. The effect will lessen to zero feet a few hundred feet from the channel.

On-farm drainage will affect the cropland in the same manner for the depth of the open drain or field tile. The large, forested recharge areas will remain in their present state. The system of proposed channels will allow water-control structures to be installed in the future if and when they are deemed necessary or desirable.

Agricultural Water Management: Local farm operators and landowners anticipate improved quality of crops because the installation of the project will enable producers to harvest before quality can be affected by the weather and other factors. They do expect increased yields in most crops as a result of the better utilization of fertilizer and other management factors.

The 4,090 acres of crop and pasture land benefited from flood prevention will also benefit from improved outlets for drainage. Adequate drainage of surface water will prevent stagnant water accumulation, thereby lessening the pollution problems associated with odor nuisances, fly and mosquito breeding areas, and spread of human diseases.

Fish and Wildlife and Recreation: Fishery resources within the watershed vary greatly according to specific stream reaches. For the purposes of evaluating project impacts on these resources, the stream should be subdivided as follows:

A. Stream reach from Bladenboro downstream to State Road 1178:

In this reach, stream fishery resource values are low with domestic and industrial pollution currently being the primarily limiting factors. However, stream size and water flows are of such low size and magnitude that even after the installation of a treatment plant (first phase of completion-June 1974) at Bladenboro stream fishery resources in this reach will remain of low value. This is due to the normal pollution effects associated with a town or urban area located on a small stream.

#### Environmental Impact

#### B. Stream reach from State Road 1178 downstream to Big Swamp:

In evaluating the effects of works of improvement on fishery resources in this reach, it is of critical importance to recognize the type of works planned; i.e., a floodway in which no excavation is planned and in which the overhead cover is left intact on the south side. This will be approximately 1.5 miles down to State Road 1128. Below State Road 1128, no works of improvement are planned. Since only a limited amount of construction will be carried out in this reach, the effects on the fishery resources are expected to be minimal.

#### C. Big Swamp:

The potential effects of the project on Big Swamp would be increased sediment and possibly an increase of polluted waters reaching Big Swamp proper. The installation of sediment traps, the distance between Big Swamp and the upstream termination point (State Road 1128), and the distance between the pollution source and Big Swamp, are factors which will minimize project effects on this reach. Comparative size of the drainage areas is also an important factor in the project's downstream effects. Bryant Swamp makes up 5.8 percent of Big Swamp and 1.7 percent of the Lumber River. Assuming that any increases in such factors as sediment or nitrates were delivered in total to these streams, it would require a 17 mg/l increase in Bryant Swamp to cause a 1 mg/l increase in Big Swamp. By the same reasoning, it would require a 59 mg/l increase in Bryant Swamp to produce a 1 mg/l increase in the Lumber River. Any predictable changes in Bryant Swamp, as a result of the project, would be considerably less than these amounts. (The 3 mg/l increase in sediment would cause a 0.15 mg/l increase in Big Swamp and a .05 mg/l increase in the Lumber River.) Based on these conclusions, the project would have no measurable effect on Big Swamp.

Maintenance of the sediment traps will cause an increase in turbidity for a short time immediately below each trap. Because of the type of sediment being disturbed (coarse fraction), it is expected to settle out quickly, and will have no effect downstream as far as Big Swamp.

Approximately 25 acres of wetland habitat in the lower reach of the project will not be affected to a significant degree since only a floodway is planned for the reach. These 25 acres are randomly scattered along the channel proper. Peak flows, which will be increased somewhat in the area of the floodway, should increase flooding on the adjacent wetlands in this lower reach. Fifty acres of wetland habitat in and near Bladenboro will be lost or will have a reduced value as wetland habitat as a result of channel work.

Archaeological, Historic, and Scientific: There are no properties listed in the National Register of Historic Places. There are no known places with archaeological or historical values located in the watershed. The Soil Conservation Service will contract with the North Carolina Department of Art, Culture and History for a field survey prior to construction to determine if, in fact, there are places of value in the watershed. The construction contract will further require that if any values are uncovered during construction, work will be halted until an evaluation is made.

Economic and Social: Increased economic activity caused by the project will create eight new jobs for the entire project life. This includes two part-time (half-time) workers needed to operate and maintain the project. Construction funds, in the form of wage payments, will create 12 new jobs during the period of construction.

Income in the area will increase as a result of the project's installation. Farmers' and farm operators' net income will increase approximately \$39,410 annually. Local non-farm workers will receive \$60,000 in the form of wage payments during the period of project construction. Approximately \$6,000 will also be paid in the form of wages for operation and maintenance of the project.

Other: There will be 186 acres of forestland and 15 acres of cropland required for the rights-of-way of the project. The 15 acres of cropland will be returned to cropland immediately after construction. Ninety acres of the forestland required for rights-of-way will be used for debris disposal. As the debris decays, this land will gradually revert to forestland in the future. Increased channel widths will require 16 acres of the forestland. Spoil will be spread on the remaining 80 acres of forestland. Approximately 40 acres of this spoil area will be seeded to permanent vegetation and will be used as access roads. The remaining 40 acres will be planted to vegetation suitable for wildlife food and cover such as shrub lespedeza.

Construction methods, such as sediment traps, immediate seeding of temporary vegetation, and reducing the time between construction and seeding of permanent vegetation, will be used to reduce the construction effect of sediment delivery to downstream flood plain areas and Big Swamp.

#### 3. Favorable Environmental Effects:

- 1. Reduce flood damages on 4,090 acres of crop and pasture land by 83 percent.
- 2. Reduce flood damages in the town of Bladenboro by 38 percent.

#### Favorable Effects

- Provide adequate outlets for existing drainageways on 4,090 acres of crop and pasture land.
- 4. Reduce erosion on 890 acres by about 35 percent.
- 5. Create 40 acres of upland wildlife food and cover.
- 6. Provide for better mosquito control.
- 7. Create 12 additional jobs during construction.
- 8. Create eight new jobs for the life of the project.

#### 4. Adverse Environmental Effects Which Cannot Be Avoided:

- 1. Loss of or reduction in value of 50 acres of low value wildlife wetland habitat.
- 2. Damage one mile of fishing stream.
- 3. Increase sediment delivery during construction.
- 4. Clear approximately 96 acres of forestland.
- 5. Damage 90 additional acres of forestland.

#### 5. Alternatives:

An Accelerated Land Treatment Program Only: An accelerated land treatment program without any channel work would benefit certain facets of the environment and avoid all the adverse effects. Erosion on 890 acres of crop and pasture land could be reduced within two to three years from an average of ten tons per acre down to 6.5 tons per acre. Upland wildlife habitat should benefit as a result of the installation of practices with specific or incidental benefits to upland wildlife. Wetland wildlife habitat should not be affected. Fishery habitat should benefit as a result of a reduction of sediment being delivered to waterways. This alternative would cost \$128,900 for installation. Average annual benefits of \$550 would be realized in flood damage reduction.

The 4,090 acres of wet crop and pasture land and the town of Bladenboro would continue to have flood damage. Drainage problems caused by inadequate outlets would remain. Average annual damages from floodwater and inadequate drainage would continue at the rate of \$40,800.

Floodwater Retarding Structures: Topography of the watershed does not provide sites for construction of floodwater retarding structures with sufficient storage capacity to significantly reduce the runoff within the watershed.

System of Levees with Pumping Stations: A system of levees or dikes including pumping stations would provide flood prevention and drainage benefits to approximately 3,500 acres of wet crop and pasture land and to the town of Bladenboro. The installation of the dikes would provide incidental benefits to certain species of upland wildlife. This alternative would have no effect on the fish and wetland wildlife habitat.

The cost of this alternative was estimated at over \$800,000 installation cost and an additional \$24,000 operation and maintenance cost. It would require approximately 100 acres for rights-of-way. Installation of land treatment measures would cost an additional \$128,900. About 500 acres of crop and pasture land in small scattered tracts would not receive any flood prevention or drainage benefits. The present projected land use would not support the cost of this alternative.

Construction of Off-Stream Channels: This alternative would involve 26.9 miles of channels including 16.9 miles of channel work on laterals. A channel would be constructed down each side of the forested flood plain from Bladenboro down to State Road 1128. This would provide floodwater and drainage benefits to the 4,090 acres of cropland. Approximately 210 acres of forestland would be cleared for rights-ofway. The depths of channels required would be from 0 - 1.5 feet deeper than the existing channel. The normal low flow would, therefore, tend to flow down the off-stream channels. This alternative would cost \$560,000 for installation. The average annual benefits would be the same as the planned project (\$72,320). Installation of land treatment measures (same as planned project) would cost an additional \$128,900.

Clearing and Snagging: This alternative would consist of 18.9 miles of channel excavation along with clearing and snagging the existing channel from Bladenboro down to State Road 1128. This alternative would not provide the depth needed for adequate outlets for the cropland and for the town of Bladenboro. The increased side drainage associated with channels could be avoided with this alternative. This alternative would cost \$472,000 for installation. The average annual benefits are estimated to be \$62,300. Land treatment measures (same as planned project) would cost an additional \$128,900 for installation.

#### Alternatives

Do Nothing: The present going land treatment program would decrease erosion and sediment delivery. It is estimated that erosion on 890 acres of gently sloping land would be reduced to an average rate of 6.5 tons per acre over a period of 10 to 15 years. During this "installation" period, erosion would continue to decrease suitability of these acres for row crops and sediment would continue to be deposited in field ditches causing impaired drainage. Upland wildlife habitat would benefit as a result of the installation of land treatment practices with specific or incidental benefits to upland wildlife. Other problems, as listed under Water and Related Land Resource Problems section, would remain.

It is estimated that net annual monetary benefits of \$30,970 will be foregone if the project is not installed.

#### Other Considerations:

Vertical drainage wells and water-control structures have been suggested as a means of providing drainage, while at the same time, replenishing the ground water. The aquifers in Bryant Swamp are fully charged except during dry seasons. This means that a vertical drainage system could not provide drainage to the cropland when needed. The planned project will not preclude the use of water-control structures at some future date to provide for complete water management in the watershed.

Flood proofing could be used in the town of Bladenboro to eliminate floodwater damages. This would involve raising all entrances to all buildings now receiving damage up to a foot in elevation. Building foundations would also need to be constructed so as to avoid seepage damage. Cropland would still receive flood and inadequate drainage damage unless this alternative was used in combination with another alternative, such as a system of levees with pumping stations.

Less intensive land use in changing from crops to pasture and forest-land would lessen the needed level of protection for the present farmland. Conversion to forestland would benefit certain wildlife species, such as rabbit, squirrel, and deer. This alternative would have no effect on wetland or fishery habitat. Habitat quality for wildlife species, such as dove and quail, would be lowered. This change of land use would not fit into the economic enterprises to which the landowners are now committed. The loss of income from cropland production on the converted acres would require relocation of farm families. Bladenboro would still sustain the present flood damage.

More intensive land use would require a greater degree of protection than is needed at present. This protection would require larger channels, more cleared rights-of-way, and more construction throughout

the watershed. This would adversely affect the fishery and wildlife habitat unless specific management program were included in the alternative. This type of land use is not projected for the future.

Flood plain zoning could be used to insure that the present wetlands (Type 7) would not be cleared for crops or development in the future. This would insure the preservation of these lands for their best use. However, the legality of making the zoning ordinance retroactive to apply to the wet cropland would be highly questionable without compensation to the landowners.

Flood insurance could be made available to the people in the watershed by special legislation. It is estimated that because of the high probability of damages occurring frequently that the average annual cost of flood and drainage insurance in this watershed would equal or exceed average annual damages. Flood insurance would, if available, leave the fish and wildlife habitat in its present state.

Public acquisition of flood prone lands would require the purchase of 4,090 acres of cropland. This would leave only 890 acres of cropland in the watershed. The cost of the land would exceed 2,000,000 dollars. Most of the people on the 140 farms would have to relocate and/or seek employment elsewhere.

The <u>installation cost</u> of the <u>project</u> (approximately \$498,000) could <u>invested in securities</u>. This would provide an average annual net income of \$180 per farm and business. Except for this net increase in income, the paying of a subsidy of this kind would be essentially the same as the do nothing alternative. There is, at present, no legislative authority which permits payments in this manner.

# 6. Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity:

There are no river basin studies completed or underway that include Bryant Swamp Watershed. It is expected that the trend to larger machinery, forcing the consolidation of small fields into larger ones, will continue into the foreseeable future. This consolidation will mean some clearing of forestland on the more productive soil surrounding the cropland. Clearing of the forestland will not cause a significant increase in cropland because some of the less productive cropland will be converted to permanent pasture. Additional cropland is expected to be converted to other uses, such as wildlife, recreation, and home sites.

Channel work will cause a 0.4 foot increase in stage for the 5-year, 24-hour frequency storm at the end of modification. The increase will occur in the 70-acre swamp below State Road 1128. The swamp will act

#### Relationship

as a detention pool, permitting the increased stage to be dissipated at the junction with Big Swamp.

The increased sediment delivered to Big Swamp caused by construction is expected to peak during construction and then decrease for a period of three years until the channel system stabilizes.

The project is compatible with the trend in the watershed to higher mechanization and larger fields. Outlets for the on-farm drainage system, for both surface and tile drainage, will permit the efficient use of modern machinery. Sheet erosion will be reduced to a level that will conserve the land for future generations.

The project can be effective after the 50 year designed life of the project, as long as land treatment practices and maintenance are continued.

There are eight applications on Lumber River tributaries presently submitted for assistance under Public Law 566. These eight applications make up approximately 24.6 percent of the drainage area of the Lumber River. Works of improvement have been completed on two of these tributaries with 4.9 percent of the drainage area. Projects have been planned on three other tributaries comprising 2.2 percent of the drainage area. Bryant Swamp makes up 1.7 percent of the drainage area of the Lumber River and 5.8 percent of that of Big Swamp.

The increased peak discharge at the end of channel work will be dissipated after it enters Big Swamp. The estimated increase in sediment delivered to Big Swamp is such a small part of the total that any change from present conditions to future would be within allowable statistical error under accepted methods of sampling. It is, therefore, anticipated that this project will not have a cumulatively significant impact on the environment.

There have been many comments expressing a fear that one water resource improvement project in a river basin will quickly cause other projects to come into being, thereby increasing the flooding and damages in the lower reaches of the river basin. Channel work (all other factors in the watershed remaining the same) provides a more efficient system for moving floodwaters. This means that flood peaks are higher and flood duration shorter at the lower end of the modified channels. Using this reasoning, if all channels within a river basin were modified at the same time, there could be large adverse effects on flooding, sedimentation, pollution, ground water. etc., in the lower reach of the basin.

Further investigation will show that not all sub-basins of a given river basin need modifying; nor is channel work feasible or desirable on all sub-basins. The percent of cropland subject to damage by

#### Relationship

erosion varies throughout the basin. Some sub-basins (where water resource improvement is needed or desired) have topography that permits floodwater retarding structures for flood control. These sub-basins offset the higher peaks in other sub-basins that have only channel work. Changing the time of merging of flood flows from individual sub-basins may cause either an increase or decrease in flooding in lower reaches of the basin. Limited resources, including capital and manpower, along with time needed for planning, insure that all projects with water resource improvement will not be installed in a short period of time. Urbanization, increased demand for farm products, and increased activity associated with more people, can create conditions to increase storm runoff.

Planning and co-ordination of all the above activities is needed to insure knowing and controlling cumulative effects of projects on the downstream section of a river basin.

#### 7. Irreversible and Irretrievable Commitments of Resources:

There will be 96 acres of forestland committed to other uses by the project. This includes 16 acres in channels, 40 acres to wildlife habitat, and 40 acres to access roads. This represents a changed land use for the 96 acres for the life of the project.

Fifteen acres of cropland and 90 acres of forestland will be needed for rights-of-way during construction. The cropland will revert to cropland immediately after construction. Nature will be permitted to revert the 90 acres of forestland to forest following construction.

# 8. Consultation with Appropriate Federal Agencies and Review by State and Local Agencies Developing and Enforcing Environmental Standards:

Numerous public meetings have been held on Bryant Swamp Watershed following a setting of priority by the North Carolina Soil and Water Conervation Committee on March 8, 1967. One of the first meetings was held April 5, 1967, to discuss the planning process and problems in the watershed. Those prsent included representatives from United States Fish and Wildlife Service, North Carolina Wildlife Resources Commission, Mayor of Bladenboro, Soil Conservation Service, and nine local citizens.

Field trips were made by Soil Conservation Service biologist and engineer, and representatives from United States Fish and Wildlife Service and the North Carolina Wildlife Resources Commission. The Soil Conservation Service biologist has consulted with these representatives on a continuing basis. The local people requested information concerning the need for a project from several local agencies. Letters from the Health Department, ASCS County Committee, County Agricultural Extension Office, Bladenboro School, and Industrial Development Commission were included in the application for assistance.

#### Consultation

A meeting was held with the sponsors and interested people on November 17, 1970 to explain the review draft of the work plan.

Representatives of the Soil Conservation Service and the North Carolina Wildlife Resources Commission met on December 6, 1973 to discuss comments concerning fish and wildlife resources made on the draft environmental statement.

Several contacts were made with the local people between September and December, 1973 as a result of comments received on the draft statement. Additional information or verification of existing information was obtained in the following areas:

- 1. Floodwater damages in Bladenboro.
- 2. Industrial prospects' reasons for not locating in Bladenboro.
- 3. Location and number of storm sewers.
- 4. Status of the proposed sewage treatment plant.

In consultation with Environmental Protection Agency, they suggested a possible need may develop for a United States Army, Corps of Engineers permit for the discharge of dredge and fill material, purusant to Section 404 of the Federal Water Pollution Control Act Amendments of 1972. At this time, both the Corps of Engineers and Environmental Protection Agency are considering the permit requirement for construction of other projects. The Soil Conservation Service and the sponsors stand ready to abide by decisions that may be rendered on this issue. If permits are required, they will be obtained before construction is initiated.

The following agencies were asked to comment on the draft environmental statement:

United States Department of the Army, Corps of Engineers; United States Department of the Interior; United States Environmental Protection Agency; United States Department of Transportation; United States Department of Health, Education and Welfare; North Carolina Department of Natural and Ecomomic Resources; North Carolina Department of Administration, State Planning Division (State Clearinghouse); North Carolina Department of Agriculture; and other interested parties.

Comments have been received from the following agencies, groups, and individuals:

United States Department of the Army, Corps of Engineers; United States Environmental Protection Agency; United States Department of Health, Education, and Welfare; United States Department of the Interior; United States Department of Transportation; North Carolina Department of Administration; North Carolina Department of Natural and Economic Resources (Office of Forest Resources and Water and Air Resources, and the Wildlife Resources Commission); Sierra Club-Horace Kephart Group; League of Women Voters of North Carolina; and Vincent J. Bellis.

A summarization of comments received on the draft environmental statement together with appropriate responses are listed below:

## U. S. Army, Corps of Engineers, Charleston District

1. Comment:

Your proposed project will not conflict in any way with any of the Corps' small flood control projects in the Lumber River Basin. Construction of your project will not preclude the construction of future flood control works on the main stem or other tributaries of Lumber River.

Response: No response needed.

#### U. S. Environmental Protection Agency

1. Comment:

We recommend that the Environmental Impact section and the Adverse Environmental Effects Which Cannot Be Avoided section be expanded to include the adverse impact of channelization.

Response:

These sections have been rewritten following a meeting in December, 1973, with the North Carolina Wildlife Resources Commission concerning the effects of channel work on the fish and wildlife habitat. Principles used as a result of a meeting with an EPA representative in December, 1973, concerning ground water in Chicod Creek were also used in Bryant Swamp Watershed. The effect of channelization on Big Swamp is discussed in the section on Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity.

2. Comment:

We suggest the following adverse environmental effects be added: (1) Increase water temperatures and reduction in the assimilative capacity of Bryant Swamp Canal, and (2) Transfer of additional pollutional load to Big Swamp.

Response:

Construction methods such as construction from one side on all channels and leaving the south side of the channel undisturbed when constructing the floodway are proposed to minimize any water temperature changes. The new treatment plant will have a measurable effect in reducing the pollution in Bryant Swamp.

The possibility of damage to one mile of fishing stream is recognized in the Adverse Environmental Impacts section and discussed under the Environmental Impact section.

Additional pollution of Big Swamp has been discussed under the section Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity.

#### 3. Comment:

The increased pollutional load including silt pesticides, farm nutrients, and the residual pollutants from the industrial and domestic waste treatment systems at Bladenboro, could cause general degradation in water quality of Big Swamp at the junction with Bryant Swamp Canal.

#### Response:

Many of the pesticides and farm nutrients are transported by sediment particles. Sediment created by erosion of cropland will be reduced; thereby reducing these pollutants. (Increase in sediment delivered to the end of the project is caused by an increase in area of channel banks.) Drained land allows more of initial rainfall to be absorbed into the soil, carrying water soluble nutrients with it. More vigorous plant growth on drained land uses more of the nutrients. The sewage treatment plant is now under construction with the first phase schedule for completion in June, 1974. This plant will have the largest effect on the water quality in Bryant Swamp.

#### 4. Comment:

If slash from clearing is to be disposed of by open burning, assurance should be given that it will comply with state and local standards.

#### Response:

The requirement of contractors to comply with local and state laws is a part of the general provisions of all contracts in which the U. S. Government participates.

#### U. S. Department of the Interior

#### 1. Comment:

It should be noted that resources of sand and gravel are found in the project area and a statement added that no deposits of minerals are known to be under development at this time.

Response:

We concur. The statement has been changed to recognize the sand and gravel deposits located in the watershed.

#### 2. Comment:

Archaeological values should be based on actual surveys or studies by professional archaeologists.

- Response: The Archaeological, Historic, and Scientific section of the environmental impact has been rewritten to include a field survey of the archaeological values in the construction areas before construction begins. (The survey by the North Carolina Department of Cultural Resources, Division of Archives and History was completed in January 1975 and shows no impact on any known archaeological or historical sites.)
- 3. <u>Comment:</u> The statement should be revised to fully describe the existing fish and wildlife resources of the Bryant Swamp Watershed and the downstream area of Big Swamp.
  - Response: The Fish and Wildlife Resources section has been rewritten after consultation with a representative of the North Carolina Wildlife Resources Commission. Wildlife species on which the project would have an effect have been included.
- 4. <u>Comment:</u> The 75 acres of wetland habitat being close to a population center and receiving only light hunting pressure is misleading because this area could provide escape cover and often serve as wildlife sanctuaries.
  - Response: The Fish and Wildlife section of the Environmental Setting has been revised to recognize the sanctuary value of the habitat.
- 5. <u>Comment</u>: We question the statement that fishery resources within the watershed are insignificant.
  - Response: The Fish and Wildlife section of the Environmental Setting has been revised to include the potential of Bryant Swamp as a fishery.
- 6. <u>Comment</u>: The final statement should describe the hydrologic and aquatic biota of Big Swamp.
  - Response: The Environmental Impact section of the statement has been rewritten to include the potential effects of the project on Big Swamp.
- 7. <u>Comment:</u> The watershed work plan should be revised to include a comprehensive discussion of the items concerning the fish and wildlife resources of Bryant Swamp Watershed and Big Swamp.
  - Response: The work plan has been revised to include revisions made in the environmental statement.

#### U. S. Department of Transportation

1. <u>Comment</u>: It is suggested that early co-ordination be undertaken with the railroad both in design and construction phase.

Response: Co-ordination has been made with the Seaboard Coast Line Railroad giving the plans for modification and receiving an estimated cost of the modification. Further contact will be made during the design phase.

#### N. C. Department of Natural and Economic Resources

1. <u>Comment</u>: What are the specific repercussions on land use as a result of the project?

Response: Land use changes in the Environmental Setting section have been rewritten to make it clear that these changes will be a result of present trends -- not project installation.

2. <u>Comment</u>: A description of Type 7 wetland habitat should be included for clarification.

Response: A description of Type 7 wetland habitat has been included in the Environmental Setting section of the statement.

3. <u>Comment:</u> The N. C. Wildlife Resources Commission disagrees with the statement that Bryant Swamp Canal is considered a marginal type feeder fishing stream.

Response: The Fishery Resource section has been rewritten as a result of direct consultation with representatives of the N. C. Wildlife Resources Commission.

4. Comment: The sanctuary value of the 50 acres of wetland near Bladenboro should be considered.

Response: A statement has been added in the Fish and Wildlife and Recreation sections of the Environmental Setting recognizing the sanctuary value of the wetlands.

5. <u>Comment:</u> There is little information on the soil and water conservation district concerning the degree to which effective and necessary land treatment measures have been implemented.

Response: This information is supposed to convey the working relationship that the soil and water conservation district

has with the farm operators in the watershed. Additional information has been added in the <u>Soil</u>, <u>Water</u>, and <u>Plant Management section</u> of the <u>Environmental Setting</u> to indicate problems getting land treatment measures installed. The statement also contains information that <u>erosion</u> is a problem on only 890 acres in the watershed.

- 6. Comment: The Senior Staff Forester of the Office of Forest Resources concluded that "only a limited number of landowners in the watershed are interested in managing and improving their forest resources." This somewhat parallels the adoption of soil and water conservation plans.
  - Response: As indicated in the preceding response, additional information on problems with land treatment has been added to the Environmental Setting section of the statement.
- 7. Comment: Because of the probability that land treatment measures will not be effectively installed, the environmental statement should discuss the degree to which the claimed project benefits will be realized with the installation of structural measures only.
  - Response: Project benefits, as presented in the statement, are based on a 20 percent non-participation in land treatment and a 10-year lag in accrual of these benefits.
- 8. <u>Comment:</u> According to interviews with local merchants, there are only three stores in Bladenboro which receive significant damage from floodwaters.
  - Response: The Bladen County representative of the Soil Conservation Service made a survey during October, 1973, and found 18 business establishments which receive floodwater damages. The most recent damage was in 1971.
- 9. <u>Comment:</u> Specifically, which industrial prospects have rejected Bladenboro for lack of adequate drainage on building sites? Have there been other reasons as well?
  - Response: There was further contact with Mr. W. G. Fussell, Executive Chairman of Industrial Development of Bladenboro, in October, 1973, in which he reaffirms industries rejecting Bladenboro because of poor drainage and flooding. He states that there could be other reasons; however, the prospects did not list them.

10. Comment: Bladenboro's "storm sewers" consist of one principal outlet located in front of the Red and White Food Store.

Inadequate removal of storm water must also be attributed to inadequate storm sewers and not simply inadequate flows in the main channel.

Response: According to the records from the town of Bladenboro, there is one situation where five sewers are connected to one outlet. However, the remaining 38 storm sewers are connected to separate outlets.

11. Comment: At least one farmer, who owns 500 acres, may receive up to 10 percent of the total farm benefits. How many of the farms benefited are 400 acres or more? What is the maximum benefit, in dollars, that will accrue to any single individual upon completion of the project?

Response: According to the statement, there are 140 farms in the watershed with a maximum size of 500 acres. There are 5,000 acres of crop and pasture land being benefited. The 500 acres in the maximum size farm includes forestland as well as cropland; therefore, the 500-acre farm would not be receiving 10 percent of the benefits. The Soil Conservation Service does not identify benefits by landowner. Under Public Law 566, there is no regulation limiting the percent of land in a watershed project which can be under one owner.

12. Comment: There is no assurance that the land treatment measures will be carried out. Isn't the main purpose of the project the carrying out of land treatment measures on agricultural lands?

Response: Land treatment measures included in the plan are estimates of needs and goals that can be reasonably carried out during the project installation. Additionally, the Soil Conservation Service is charged with the responsibility of formulating projects in accordance with the Watershed Protection and Flood Prevention Act:

'That erosion, floodwater, and sediment damages in the watersheds of the rivers and streams of the United States, causing loss of life and damage to property, constitute a menace to the national welfare; and that it is the sense of Congress that the Federal Government should cooperate with States and their political subdivisions, soil or water conservation districts, flood prevention or control districts, and other local public agencies for the purpose of preventing such damages and of furthering

the conservation, development, utilization, and disposal of water and thereby of preserving and protecting the Nation's land and water resources."

In addition, watershed projects are to be formulated in full recognition of the National Environmental Policy Act of 1969 (P. L. 91-190), in which the Congress declares:

"... it is the continuing policy of the Federal Government, in co-operation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans."

#### 13. Comment:

The effectivenss of sediment traps is not documented and therefore the use of the word "minimize" should be changed to "reduce". The traps should be described in detail.

#### Response:

The Soil Conservation Service agrees. The statement has been changed in the <u>Planned Project</u> section to reflect the comments including the responsibility for cleaning out.

#### 14. Comment:

It should be made clear that no "downstream damage" is contingent upon future development downstream.

#### Response:

The maximum discharge and stage for the design storm, as indicated in the statement, is at the end of channel work. Bryant Swamp has 5 percent of the drainage area of Big Swamp and the length of the watercourse is approximately 20 percent; therefore, it is concluded that the peak of Bryant Swamp entering Big Swamp would not cause an increase in the peak of Big Swamp.

#### 15. Comment:

It is apparent to anyone who is familar with the current patterns of urban development that the mere identification of a flood plain is not effective in stopping such activities.

#### Response:

The Soil Conservation Service agrees that identification and annual publication of the location of the flood plain after the project is installed will not completely halt

development in the flood plain. The Service feels, however, that it is a step in the direction of showing the need for some type of control, while at the same time making the people aware of the problems involved in developing in a flood plain.

- 16. Comment:
- Significant floodwater damages affect only a few stores in Bladenboro. Increasing farm income depends heavily on the degree to which land treatment measures are implemented.
- Response:

As indicated in the response to comment #8 above, an October, 1973, survey found 18 business establishments receiving floodwater damage. Responses to Comment #'s 5, 6, and 7, explain benefits as they relate to land treatment.

17. Comment:

Statement concerning erosion reduction should be documented.

Response:

Figures have been added to the erosion information in both the Resource Problems and Environmental Impact sections in order for the reader to see how 35 percent was computed. The complete calculations, computed by SCS personnel, are in the geologic data on file with the Soil Conservation Service.

18. Comment:

The sediment was given in tons per year and acre-inches in the preliminary draft environmental statement. In the draft statement, the units are parts per million or milligrams per liter. Are the figures equivalent or why have they changed?

Response:

The units were changed as a result of comments received on the preliminary draft environmental statement. Turbidity is usually expressed in units of parts per million or milligrams per liter. The figures have been revised from the preliminary statement. In the absence of completed research on this phase of sedimentation, the latest figures were computed in March, 1973, by a group of geologists from Soil Conservation Service, using all available data and conditions in Bryant Swamp.

19. Comment:

What effects will the sediment have on dissolved oxygen, plankton productivity and BOD?

Response: Increasing sediment concentration from 5.5 ppm to 8.0 ppm. will have no measureable effect on the above factors. A new sewage treatment plant for Bladenboro is now under construction. Changes in the levels of dissolved oxygen, plankton productivity, and BOD would be credited to this installation.

20. Comment: Consideration should be given to an open-space recreation plan listed as third priority in terms of open-space needs of regional significance.

Response:

Contact concerning this plan has been made with the Region N Planning Office. As of January, 1974, there had been no plans for implementation of this open-space plan. The Soil Conservation Service, therefore concluded that this plan would not be relevant to the Bryant Swamp project.

21. Comment: The creation of eight jobs described in the statement are inconclusive estimates. The studies on which these estimates are based should be described in detail in the final environmental statement.

Response:

The rationale for estimating the number of jobs the project would create is drawn largely from a paper by Vernon R. Eidman, Professor of Agricultural Economics at Oklahoma State University, Estimating the Secondary Impact of Watershed Projects. Briefly stated, agriculture and manufacturing are the basic industries of the watershed area. These are the industries which export from the area and support the trade, service, and government sectors. Eidman's discussion of the secondary impact of watershed development follows:

'The various sectors of a local economy contain a degree of interdependence whereby a change in one sector results indirectly, in changes to the other sectors. Multiplier analysis provides the best available technique to analyze the secondary economic impact or change in economic activity resulting from initial changes in certain economic variables. The secondary impact of watershed development is expected to take the form of increases in the trade activity of the area, increases in nonfarm employment, increases in population, and increases in income. Watershed development brings about an increase in demand for agricultural productive inputs and an increase in farm incomes. This in turn leads to an increase in employment opportunities in other businesses in the local area which produce goods and services for the farm sector. These industries in turn increase their demand for goods

and services from other economic groups of the community. This process results in an increase in income for the various economic groups of the local area. The increase in employment tends to result in increases in population."

22. Comment:

The construction of the project prior to completion of the proposed Bladenboro sewage treatment plant will further contribute to degradation of water quality of Big Swamp.

Response:

The proposed sewage treatment plant for Bladenboro is now under construction. (First phase of construction is scheduled for completion - June 1974.)

23. Comment:

There will be some reduction in the growth on trees located below channel work as a result of increased flooding during the growing season.

Response:

The statement recognizes an increase in the flood peaks below channel work. However, the area in question floods now with a comparative storm. An equal sized storm will deliver essentially the same volume of water to this area, either with or without project installation. If the water reaches the area sooner and at a higher peak, then it will remain on the area a shorter length of time. Therefore, we conclude that there would be no effect on the forest in the flood plain below the channel work.

24. Comment:

The favorable environmental effect of creation of eight new jobs for the life of the project is highly speculative.

Response:

As indicated in response to comment #21 above, this impact was based on a paper by Vernon R. Eidman, Professor of Agricultural Economics, Oklahoma State University.

25. Comment:

The Alternative section is entirely inadequate in its treatment of alternatives. The final environmental impact statement should discuss the following additional alternatives in combinations:

- a. construction of off-stream channels
- b. clearing and snagging
- c. vertical drainage wells
- d. flood plain zoning
- e. public acquisition of flood prone lands
- f. flood proofing
- g. investment of project funds and distribution of interest to landowners.

- Response: A discussion of each of the above listed alternatives has been added to the Alternatives section of the statement.
- 26. Comment: The statement "the project can be effective after the 50-year designed life of the project, as long as land treatment practices and maintenance are continued," is highly speculative and present controls are not adequate to insure this effectiveness.
  - Response: The statement recognized the need for land treatment practices and maintenance in order for the project to be effective.
- 27. Comment: What is the upper limits to the percent of tributaries and stream channels that can be modified without seriously affecting downstream environments.
  - Response: A discussion of this comment has been added to the statement under the section: Relationship Between Local

    Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity.
- 28. Comment: It is suggested that the figures presented in Appendix A be better defined to alleviate the problem of searching through the body of the statement to determine their meaning.
  - Response: Appendix A is intended to assist the reader in understanding the narrative of the statement. Therefore, we have added Table 5 from the work plan to Appendix A to assist the reader in following the figures listed in the statement.
- 29. <u>Comment</u>: It is suggested that Type 7 wetland habitat be included on the project map.
  - Response: The Soil Conservation Service will incorporate this comment into future project maps. Type 7 wetland habitat (forested swamps flooded with up to one foot of water at different times throughout the year) consists of 50 acres near Bladenboro and 25 acres from Bladenboro down to State Road 1128. The Service does not feel that the time and expense in modifying the project map is warranted in Bryant Swamp.

Office of Water and Air Resources (N. C. Department of Natural and Economic Resources)

1. <u>Comment</u>: The associated flood plain management measures should be discussed in greater detail.

Response: The statement requires that the flood plain map included as Appendix C be published at least annually. The Service recognizes that this act by itself will not completely halt development in the flood plain. It is a step, however, in the direction of showing the need for some type of control, while at the same time, making the people aware of the problems involved in developing in a flood plain.

2. Comment: No reference is made to the possible or potential effects of the project on the ground water resources of the area.

Response: Ground water is discussed under the Environmental Impact section and under the Alternatives section of the revised statement.

3. Comment: A permit for construction and operation of a tertiary type 0.5 MGD wastewater treatment facilities was issued April 13, 1973.

Response: No response needed.

4. Comment: No objections from a water quality standpoint are indicated in connection with this project.

Response: No response needed.

North Carolina Wildlife Resources Commission (N. C. Department of Natural and Economic Resources)

1. <u>Comment:</u> The Commission maintains that just because the fishery resources are not being exploited, does not necessarily mean that these resources are of negligible value.

Response: The statement has been revised to show the potential of the fishery resource as well as existing conditions in the Environmental Setting section of the statement.

- 2. <u>Comment</u>: The reader infers that not more than one-half of the existing habitat would be destroyed in reading the statement about the floodway that "Only one side of the channel will be disturbed to minimize effects on the fishery resource."
  - Response: The statement has been revised to explain more fully the floodway proposed. No excavation will be done in this area. The bank left undisturbed is principally for the effect it would have on maintaining water temperatures.
- 3. <u>Comment:</u> The average annual concentration are unsupported estimates that mean very little in terms of how much sedimentation will accrue in the lower reach of Bryant Swamp and in Big Swamp from project construction.
  - Response: The concentration of sediments are based on available research data. The sediment at the lower end of Bryant Swamp will be principally suspended sediments. The units used are those normally used for this type of measurement. Average annual concentrations are used because the time element of the sediment is as important to the environment of Big Swamp as is the amount.
- 4. <u>Comment</u>: The adverse effect of damaging one mile of marginal feeder type fishing steam is an understatement of the fishery resource of Bryant Swamp.
  - Response: The section of the statement concerning the fishery habitat on Bryant Swamp has been revised after consultation with a representative of the North Carolina Wildlife Resources Commission in December 1973.
- 5. <u>Comment</u>: The fact that 50 acres of wildlife habitat might have a high sanctuary value to many forms of wildlife is not mentioned.
  - Response: The sanctuary value of the habitat is now recognized in the Fish and Wildlife Resources section of the Environmental Setting.

#### Horace Kephart Group of the Sierra Club

1. Comment: Generally speaking, the possible benefits of this project seem to be greatly exaggerated, both in terms of any immediate economic benefits, such as jobs at the construction site, or any long-term benefit, such as flood control.

#### Reponse:

No attempt to exaggerate is intended. It is contended that an increase in net farm income of approximately \$39,500 annually is significant in a watershed with 140 farms, where per capita income is low. However, it is possible that gains in the quality of life for people living in the watershed are as important, if not more important than strictly monetary gains. Improvement of drainage and reduction of flooding not only reduce costs of public road maintenance, but also makes it possible to use on-farm roads more effectively. Improved functioning of septic tanks is a major consideration in this area on which monetary evaluation is not made.

The Arthur D. Little, Inc. publication entitled: Report on Channel Modifications, Volume 1 (p. 291), notes that:

"On balance, we believe that the indirect external benefits arising from many channel modification projects have been seriously neglected and they need not be because the economic equivalent of many social values can be calculated. At the same time--and as our critics have justly pointed out, indirect social costs should be reckoned along with the benefits. We say so in a subsequent section. However, they also urge that our claim about indirect benefits being of substantial value should be struck from the report as an unsubstantiated value judgment. This we vigorously dispute, again on the basis of the people left behind with inadequate schools, roads, medical services, posted services, and other amenities taken for granted in metropolitan regions such as Washington, D.C."

This point is stressed again in the economic evaluation of Caw Caw Swamp, a completed watershed project in Robeson County which is quite similar to Bryant Swamp:

'We cannot overlook the probable indirect economic gains to the local community (as distinct from national income efficiency calculations) from improvement in social services throughout the watershed, the reduction in cost of road maintenance, the alleviation of persistent poor drainage for septic tanks and other rural community amenities." (Vol. II, p 40-20, A. D. Little, Inc., -- Report on Channel Modifications)

#### 2. Comment:

It would hardly seem that the project would be justifiable merely to increase the amount of available pastureland.

Response: The figures quoted indicate the changed land use as a result of present trends. Project benefits from agricultural land are a result of decreased production costs, higher quality of crops and increased yields on 4,090 acres of cropland in the watershed.

3. <u>Comment</u>: Nowhere in the statement are the dollar figures for the benefits of the project qualified, which leaves some doubt as to their accuracy.

Response: Benefits are calculated according to policies, standards, and procedures. (Senate Document No. 97, 87th Congress, 2nd Session) The basic information and back up data for these benefits are on file in the office of Soil Conservation Service in Raleigh, North Carolina.

4. Comment: The statements that "new jobs and incomes generated by the project will make a significant contribution to the standard of living" and "fewer families will leave their communities migrating to cities, in search of opportunity and higher standard of living" is sheer hyperbole.

Response: The Soil Conservation Service does not intend to imply that the Bryant Swamp Watershed project will solve all the economic problems in the watershed. The number of jobs the project is estimated to create is drawn largely from a paper by Vernon R. Eidman, Professor of Agricultural Economics at Oklahoma State University entitled:

Estimating the Secondary Impact of Watershed Projects.

The A. D. Little, Inc., publication entitled: Report on Channel Modification refers to some of these benefits.

See response to comment #1 above.

5. Comment: If the state of poverty of the local landowners is as critical as the social commentary indicates, it may be possible that the landowners will not be able to bear the cost of treatment measures.

Response: Benefits of the project are based on a 20 percent non-participation and a 10-year lag in the land treatment measures. Other sources of assistance such as the existing Rural Environmental Conservation Program are expected to be available through the Agricultural Stabilization Conservation Service or other governmental agencies.

- 6. Comment: What effect will this project have on downstream flooding.
  - As indicated in the section: Relationship Between Local
    Short-Term Uses of Man's Environment and the Maintenance
    and Enhancement of Long-Term Productivity, the Soil
    Conservation Service, based on our hydrologic analysis,
    concludes there will be no effect on flooding downstream
    of the project.
- 7. <u>Comment</u>: It would be wise to consider not only this particular channelization project but the cumulative effects of a number of projects.
  - Response: Discussion of this situation has been included under the section: Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity.
- 8. <u>Comment</u>: Statement gives no plan as to how 90 acres of woodland will revert to woodland in the future.
  - Response: The statement has been revised to show that this 90 acres will be used for debris disposal and will be permitted to revert naturally to forestland. This is explained in the section: Irreversible and Irretrievable Commitments of Resources.

## Vincent J. Bellis, Greenville, North Carolina

- 1. <u>Comment</u>: Ending the channel modification well upstream from the confluence with Big Swamp and restricting the berm to one side only in the lower mile should help reduce sediment discharge markedly while preserving some wetland habitat.
  - Response: No response needed.
- 2. <u>Comment</u>: There is no direct comment concerning possible changes in water chemistry. Some baseline water chemistry data . . . . BOD, diurnal, D.O's, nitrogen, etc., should be obtained for future comparison and management purposes.
  - Response: The Soil Conservation Service agrees that at present there is meager data available as to the effects of channelization on water chemistry. The Environmental Setting section has been revised to include available data on water quality in Bryant Swamp and Big Swamp.

3. Comment: It is unlikely that the Bryant Swamp project could have any effects on the estuary at the outlet of the Pee Dee River. However, with a number of projects, I wonder what the cumulative effects might be.

Response: A discussion of cumulative effects of a large number of projects has been incorporated into the section on Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity.

4. <u>Comment</u>: The small watershed projects must be co-ordinated by all agencies involved and throughout an entire river system before the true environmental impact can be determined.

Response: The Soil Conservation Service agrees, and therefore, keeps all federal and state agencies informed of its activities through notices of intent and review processes.

5. <u>Comment</u>: At least one farmer who owns 500 acres will receive 10 percent of the total farm benefits. What is the maximum benefit that will accrue to any single individual upon successful completion of the Bryant Swamp Project?

Response: According to the statement, there are 140 farms in the watershed with a maximum size of 500 acres. There are 5,000 acres of crop and pasture land being benefited. The 500 acres in the maximum size farm includes forestland as well as cropland; therefore the 500-acre farm would not be receiving 10 percent of the benefits. The Soil Conservation Service does not identify benefits by landowner. Under Public Law 566, there is no regulation limiting the percent of land in a watershed project which can be under one owner.

6. Comment: Have these stream classifications been adjusted recently?

Response: The stream classifications, as listed in the statement, are current as of May 1974.

7. <u>Comment</u>: Need a statement from Drs. Bell, Radford or others at UNC that no endangered species are threatened by this project.

Response: No rare or endangered species were identified as being affected by the project in the Preliminary List of Endangered Plant and Animal Species in North Carolina, June, 1973, compiled by Endangered Species Committee of the Department of Natural and Economic Resources, State of North Carolina.

- 8. <u>Comment:</u> Increase in sediment delivered to Big Swamp will not have a cumulative significant impact is a judgment. What are the effects of increased turbidity on dissolved oxygen, plankton productivity, and BOD?
  - Response: The statement has been revised in the Relationship Between
    Local Short-Term Uses of Man's Environment and the Maintenance
    and Enhancement of Long-Term Productivity section to show
    the reasons for conclusions drawn about the effects of
    sediment delivery.
- 9. <u>Comment</u>: Permitting the swamp to act as a detention pool is an excellent idea. It will also serve as a sediment trap.

Response: No response needed.

- 10. <u>Comment</u>: Who will clean out sediment traps and how frequently? Won't this increase turbidity estimates?
  - Response: The statement has been revised to show responsibility for sediment traps. Since the time needed for actual clean out of each trap would be short, the increase in turbidity would be short-lived -- less than 24 hours.
- 11. <u>Comment:</u> What types of temporary and permanent vegetation for stabilization are proposed. Will N. C. Wildlife Resources Commission supervise wildlife plantings?
  - Response: Vegetation will be selected by the Service agronomist in the final design phase of the project. Wildlife plantings will be selected by the Service biologist in consultation with the Commission in the same phase.
- 9. <u>List of Appendixes</u>:

Appendix A -- Project Benefits -- Tables 5 and 6 from the work plan.

Appendix B -- Project Map
Problem Location Map

Appendix C -- Urban Flood Plain Map

Appendix D -- Comments on the Draft Environmental Statement

APPROVED BY:

State Conservationist

DATE 2-10-75

## APPENDIX A

# TABLE 5 - ESTIMATED AVERAGE ANNUAL FLOOD DAMAGE REDUCTION BENEFITS

# Bryant Swamp Watershed Bladen County, North Carolina

 $(Dollars)\frac{1}{}$ 

	:Esti	mated	Average	Annua1	Damage:	Damage
		thout	:	With	:1	Reduction
Thom	•	oject	:	Projec	et :	Benefits
Item						
Floodwater	0.6	500		3,180	<u> </u>	23,320
Crop & Pasture	26	,500		5,100	,	23,320
Non-agricultural				0.7.7		1 750
Public Roads & Bridges	1	,990				
	8	,100		2,600	0	
	36	.590		6,020	)	30,570
Subcocar						
	/1	768		89	8	3,870
Indirect		, , 00				
		250		6 01	Q	34 440
Total	41	, 358		0, 71	0	34,440
Non-agricultural Public Roads & Bridges Commercial Subtotal Indirect	8 36 4	,990 ,100 ,590 ,768		240 2,600 6,020 899 6,91	8	1,750 5,500 30,570 3,870 34,440

1/ Price base: Adjusted Normalized and 1974.

Date: August 1974

APPENDIX A

TABLE 6 - COMPARISON OF BENEFITS AND COSTS FOR STRUCTURAL MEASURES

Bladen County, North Carolina Bryant Swamp Watershed

(Dollars)

	AVERAGE	ស	ANNUAL	BENEFITS 1/2/	2/	Average	Benefit
Evaluation Unit	: Reduction	: Drainage	Reduction : Drainage : Secondary		Total	Annual Cost3/:	Cost
Stream Channel Work	33,890	20,680	11,700		72,320	38,650	1.9:1.0
Project Administration	XXXXXX	XXXXXX	XXXXXXX	×××××	ACCOUNT	007 6	

Price base: 1974 prices for all values except agricultural products which are adjusted normalized. Based on 5 7/8 percent interest rate.

XXXXXX

2,700

XXXXX

XXXXX

XXXXXXXX

XXXXXX

XXXXXX

41,350

72,320

6,050

11,700

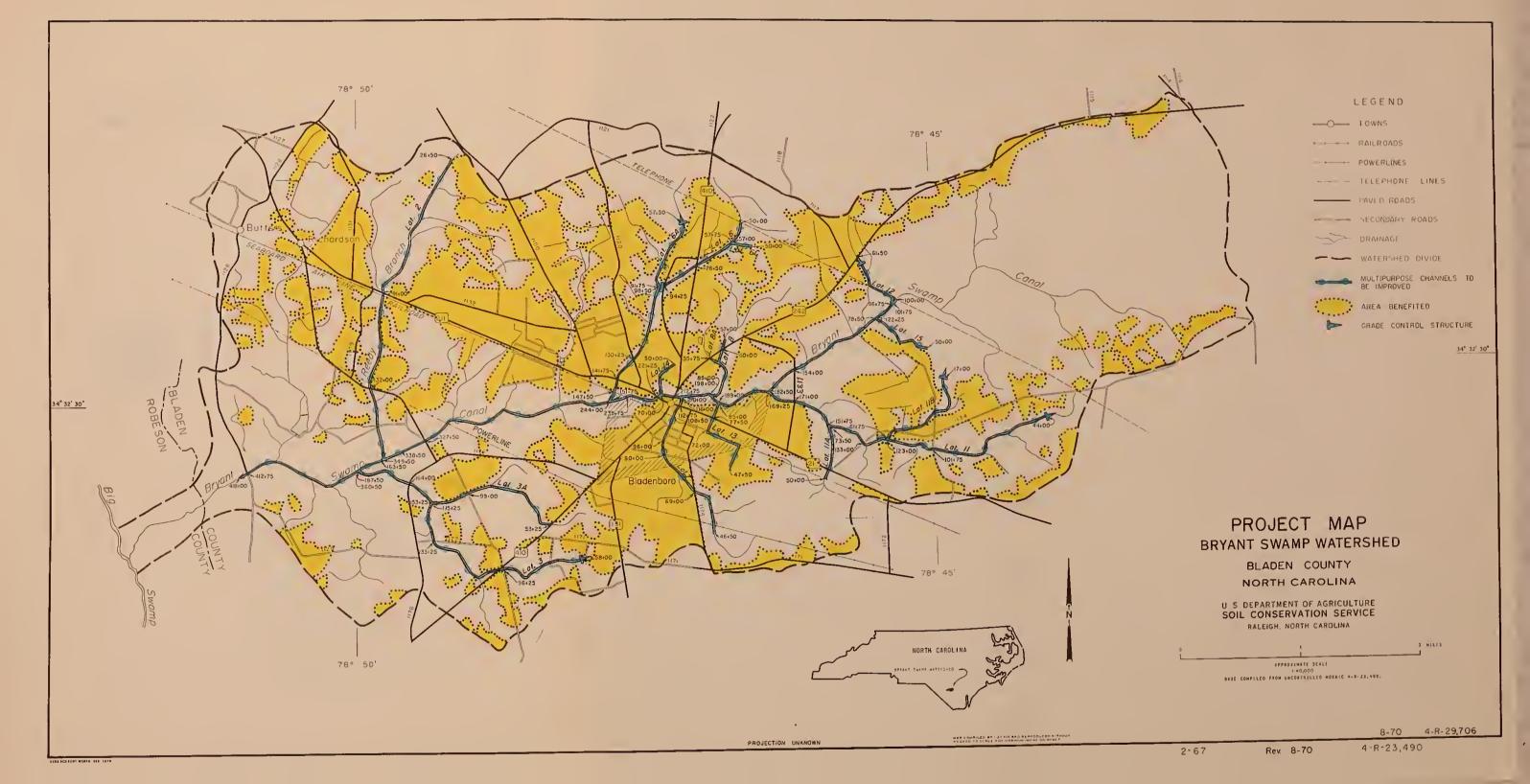
20,680

33,8904/

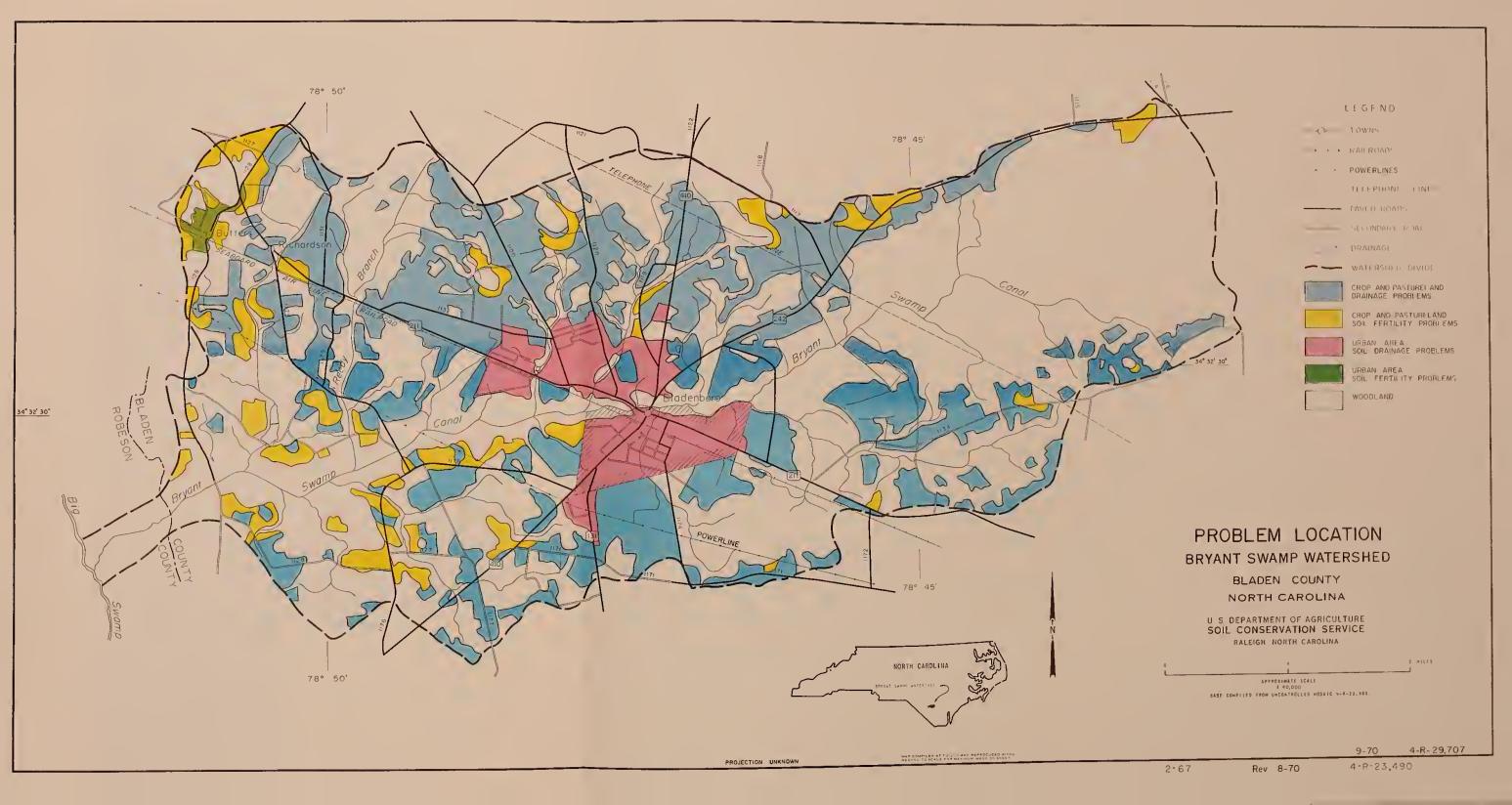
Total

From Table 4

In addition, it is estimated that land treatment measures will provide flood damage reduction benefits of \$550 annually Date: August 1974













# APPENDIX D

# COMMENTS ON THE BRYANT SWAMP WATERSHED DRAFT ENVIRONMENTAL STATEMENT

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Other Interest Groups			
Sierra Club - Horace Kephart Group League of Women Voters of North Carolina			
Interested Individuals			
Vincent J. Bellis	D-32		





### DEPARTMENT OF THE ARMY

CHARLESTON DISTRICT, CORPS OF ENGINEERS P. O. BOX 919 CHARLESTON, S.C. 29402

SANGP

25 July 1973

Mr. Jesse L. Hicks State Conservationist U. S. Soil Conservation Service P. O. Box 27307 Raleigh, North Carolina 27611

Dear Mr. Hicks:

As requested in your letter of 9 July 1973, I have reviewed the Bryant Swamp Watershed Work Plan and Environmental Statement. Your proposed project will not conflict in any way with any of the Corps' small flood control projects in the Lumber River Basin. Effects on runoff characteristics below the project will diminish rapidly as flow moves downstream. Construction of your project will not preclude the construction of future flood control works on the main stem or other tributaries of Lumber River.

Corps of Engineers' study of the Lumber River Basin in the interest of flood control is authorized by the Committee on Public Works of the United States Senate. The authorizing resolution was adopted on 15 October 1968, 90th Congress, 2nd Session; however, prosecution of the study is awaiting congressional funding.

I appreciate having had an opportunity to review your Bryant Swamp project documents.

Sincerely,

POBERT C. NELSON

202-Additional, Corps of Engineers

30:1 49 35 JULIPICE Engineer



# UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

#### REGION IV

1421 PEACHTREE ST., N. E. ATLANTA, GEORGIA 30309

SEP 18 1973

Mr. Jesse L. Hicks State Conservationist U. S. Soil Conservation Service P.O. Box 27307 Raleigh, North Carolina 27611

Dear Mr. Hicks:

We have reviewed the Draft Environmental Impact Statement for Bryant Swamp Watershed in Bladen County, North Carolina and find that while adequate coverage is given to the short-term effects of the project on water quality, it fails to properly evaluate the long-term effects.

We, therefore, recommend that Chapter 2 (Environmental Impact) and Chapter 4 (Adverse Environmental Effects Which Cannot Be Avoided) be expanded to include the adverse impact of channelization.

The major sources of pollution are pesticides and nutrients from farm runoff and domestic and industrial pollution from Bladenboro. But even with secondary treatment of domestic and industrial pollution and curtailment of farm pollution by erosion control measures, the residual nutrients and pollutants could still be a problem because of the channelization.

Channelization confines the water to a raw erosive channel devoid of bottom biota and without the benefit of the floodplain environment which absorb and convert nutrients and reduce the pollutional effects of the stream. This loss in assimilative capacity, brought about by higher stream temperatures and a reduction in oxygen, will transfer a greater pollutional load farther downstream to Big Swamp. Although the intensity of the pollutional effect on Big Swamp is difficult to predict, it should, nevertheless, be pointed out that such a pollution potential exists. Therefore, on page 16, we suggest that the following adverse environmental effects be added: (1) increased water temperatures and reduction in the assimilative capacity of Bryant Swamp Canal and (2) transfer of additional pollutional load to Big Swamp.

Also the statement on page 13 that "this increase will not cause any downstream damage" should be qualified. Although the increased flood peak in Big Swamp may not cause flood damage, the increased pollutional load,

including silt, pesticides, farm nutrients, and the residual pollutants from the industrial and domestic waste treatment systems at Bladenborg, could cause general degradation in water quality of Big Swamp at the junction with Bryant Swamp Canal.

Finally, if slash from clearing is to be disposed of by open burning, assurance should be given that it will comply with State and local standards.

We would like to have five copies of the Final Environmental Impact Statement when it is available; and if we can be of further assistance in any way, please let us know.

Sincerely,

Regional Administrator



# DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE REGION IV

50 7TH STREET N.E. ATLANTA, GEORGIA 30323

OFFICE OF THE REGIONAL DIRECTOR

September 13, 1973

Re: 319-7-73

Mr. Jesse L. Hicks
State Conservationist
United States Department
of Agriculture
Soil Conservation Service
Post Office Box 27307
Raleigh, North Carolina 27611

Dear Mr. Hicks:

Subject: Bryant Swamp Watershed

Bladen County, North Carolina

Our Washington Office has forwarded to this Office, your Draft Environmental Impact Statement for the subject project. We have reviewed the Draft and have no comments to offer.

Sincerely yours,

James E. Yarbrough

Regional Environmental Officer

nes E. Laluer



# United States Department of the Interior

#### OFFICE OF THE SECRETARY

Southeast Region / 148 Cain St., N.E. Atlanta, Ga. 30303

(ER-73/951)

SEP 1 1 1973

Mr. Jesse L. Hicks State Conservationist, Soil Conservation Service P.O. Box 27307 Raleigh, North Carolina 27611

Dear Mr. Hicks:

In response to your July 6, 1973, letter to the Assistant Secretary, Program Policy, we have reviewed the draft environmental statement and watershed work plan for the Bryant Swamp Watershed project, Bladen County, North Carolina, for its effects on outdoor recreation, fish and wildlife resources, mineral resources, and national parks, landmarks, and historic areas. This statement is being prepared in accordance with provisions of the National Environmental Policy Act of 1969, Public Law 91-190.

We offer the following comments for your consideration.

#### DRAFT ENVIRONMENTAL STATEMENT

The statement that there are no known commercial mineral resources in the Bryant Swamp Watershed should be deleted. Our concern for resources being impacted by a project is not based only on whether or not they are of current economic potential, but also upon their potential for future use. The factors that determine when a mineral deposit is economic are varied and subject to constant change -- what is noncommercial today may be commercial tomorrow and vice versa. It should be noted that resources of sand and gravel are found in the project area and a statement added that no deposits of minerals are known to be under development at this time.

Both the watershed work plan and the environmental statement cover the historic and archeological values by indicating that the National Register of Historic Places, the State Historic Preservation Officer, and the State Archeologist have been contacted. The writers have stated in several places that ". . . there are no known places with archeological or historical values located in the watershed." (Underlining supplied). This information is valuable, but does not completely satisfy the requirements of the National Environmental Policy Act for

a thorough consideration of these values. The fact that there are no known values may simply indicate that there have not been detailed studies of the area to indicate whether such values are extant. And, it is safe to surmise that considering the country as a whole, there are more valuable archeological resources that have not yet been found than those that have.

If the statement that there are no known archeological values in the area reflects a lack of study rather than an actual determination in previous surveys and studies by professional archeologists that there are in fact no recognizable values, then a second look should be taken. We would not ask that the entire watershed be surveyed, but rather that a survey may be made prior to construction of these sites which would be altered. The survey should be made far enough in advance of the construction activity so that any necessary salvage activities or possible relocation of the developments could be feasibly considered.

These sites would include those scheduled for construction and those upland sites on which spoil would be deposited. The statement should indicate that such archeological survey activity has been done in the past or is planned. If a survey is necessary, the findings of the survey should be documented in the plan. If archeological values are found that will be affected by the proposal, they should be discussed in terms of their place in the setting, impacts on the work planned, and in the comparison of benefits and costs.

The statement should be revised to fully describe the existing fish and wildlife resources of the Bryant Swamp Watershed and the downstream area of Big Swamp. For example, the draft statement mentions several upland game species found in the watershed, but fails to include the mourning dove, American woodcock, and various fur bearers. A discussion of the major groups of songbirds, wading birds, and birds of prey indigenous to the project area has also been omitted.

It should be pointed out that the watershed (consisting of wooded swamps, periodically flooded bottom lands, hardwoods, pine forests, and agricultural lands) provides a diversity of habitat types that are very productive for wildlife. Bladen County has an exceptionally high population of white-tailed deer, the most important big game animal in North Carolina. Moderate populations of small game occur in the watershed, with low populations of waterfowl.

The section on fish and wildlife resources states that approximately 75 acres of wetland habitat, being close to a population center and receiving only light hunting pressure, are of low value. This is misleading because areas such as these provide escape cover and often serve as wildlife sanctuaries.

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We question the statement that fishery resources within the watershed are "insignificant." The fact that the downstream portion of Bryant Swamp receives domestic pollution from Bladenboro and has limited fisherman access does not necessarily mean that the existing fishery is not important and does not warrant protection. By cleaning up the pollution at its source, restoring the habitat, and managing the fishery, the existing low-quality fishery could be developed into a good fishery.

Since the natural water fluctuation and aquatic ecosystem of Big Swamp are greatly dependent on downstream flows from Bryant Swamp, the final statement should describe the hydrology and aquatic biota of Big Swamp. Big Swamp provides significant wetland habitat and has been identified by the North Carolina Wildlife Resources Commission as one of the best fishing streams in southeastern North Carolina. Excellent populations of largemouth bass, chain pickerel, redfin pickerel, redbreast sunfish, bluegill, and other sunfishes occur in Big Swamp.

The draft statement gives only a superficial discussion of the environmental impact of the proposed project. The final environmental impact statement should present a complete and thorough discussion of the expected impact on terrestrial and aquatic communities both within and below the proposed project area.

Right-of-way clearing and channelization of 22.9 miles of streams will have adverse effects on the existing fish and wildlife resources. Streamside vegetation clearing will result in higher water temperatures and lower dissolved oxygen. Increased turbidity and sediment loads will add additional stress to the fishery resources of the lower Bryant Swamp Canal and possibly to Big Swamp.

Bottom-land hardwoods and wetland habitat will be destroyed; thus, wildlife habitat and populations will decrease. Losses to wildlife populations will not only result from direct mortalities and habitat destruction within the project area, but also from the displacement of populations to adjacent lands.

We are especially concerned with the adverse effects of the proposed project on the lower reaches of Bryant Swamp and in Big Swamp. The statement should cover all possible damages that may occur to the aquatic resources in Big Swamp from project implementation in Bryant Swamp.

### WATERSHED WORK PLAN

The watershed work plan should be revised to include a comprehensive discussion of the aforementioned items concerning the fish and wildlife resources of Bryant Swamp Watershed and Big Swamp.

The work plan, if implemented, will alter the presently functioning ecosystem in the seasonally flooded wooded bottom lands. Perpetuation of certain tree species growing in flooded bottom lands depends on a certain amount of seasonal flooding. In addition, stands of mast-producing hardwoods occur along the proposed channelization routes. These areas virtually sustain certain wildlife species through periods of dry conditions in which upland mast production is low and suitable nesting, resting, and feeding habitat is limited.

Our major concern with the implementation of the proposed project is with the probable adverse effects to the downstream areas below your station 338 + 50. The work plan calls for a floodway with minimal clearing from this station downstream to station 418 + 00. Also, sediment traps are to be excavated and maintained throughout the life of the project.

The increases in turbidity and sedimentation resulting from channelization and right-of-way clearing make it imperative that the planned sediment traps be installed prior to channel excavation and be regularly maintained. Clearing should be kept to a minimum and spoil banks seeded and stabilized immediately after channel construction.

To reduce additional influx of sediments and chemicals into Bryant Swamp. Canal and Big Swamp, all land-treatment measures designated in the work plan should be required. Furthermore, the work plan should contain provisions for a performance bond or other formal guarantee by local interests to insure that proposed compensatory measures relative to fish and wildlife resources will be carried out.

Sincerely yours,

(Miss) June Whelan

Special Assistant to the Secretary

Southeast Region



# DEPARTMENT OF TRANSPORTATION UNITED STATES COAST GUARD

MAILING ADDRESS: (G-WS/83)
U.S. COAST GUARD
400 SEVENTH STREET SW.
WASHINGTON, D.C. 20590
PHONE: (202) 426-2262

7 SEP 1973

Mr. Jesse L. Hicks
 State Conservationist
 Soil Conservation Service
 P. 0. Box 27307
 Raleigh, North Carolina 27611

Dear Mr. Hicks:

This is in response to your letter of 6 July 1973 concerning the Bryant Swamp Watershed Project, Bladen County, North Carolina.

The concerned operating administrations and staff of the Department of Transportation have reviewed the material submitted. The Federal Railroad Administration commented as follows:

"The Federal Railroad Administration notes that proposed structural works will involve considerable involvement with existing railroad facilities. It is suggested that early coordination be undertaken with the railroad both in the design and construction phase. This coordination is particularly important during construction since railroads do not have the flexibility of rerouting that is inherent in the highway system."

The Department of Transportation has no further comments to offer nor do we have any objection to the project.

The opportunity to review this draft statement is appreciated.

Sincerely,

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Captain, U. S. Coast Guard Deputy Chief, Office of Marine Environment and Systems By direction of the Commandant

# STATE OF NORTH CAROLINA DEPARTMENT OF ADMINISTRATION



JAMES E. HOLSHOUSER, JR.
GOVERNOR

WILLIAM L BONDURANT

REPLY TO:

CLEARINGHOUSE AND INFORMATION CENTER 116 WEST JONES STREET RALEIGH, N. C. 27603 (919) 829-4375

September 28, 1973

Mr. Jesse L. Hicks State Conservationist Soil Conservation Service, USDA Post Office Box 27307 Raleigh, North Carolina 27611

Dear Mr. Hicks:

Re: Draft Environmental Statement and Watershed Work Plan, Bryant Swamp Watershed, Bladen County, North Carolina

The subject draft environmental statement and watershed work plan were referred by this office to the following agencies for review and comment:

North Carolina Department of Natural and Economic Resources

Division of Health Services, N. C. Department of Human Resources

Division of Historic Sites and Museums, N. C. Department of Cultural Resources

Division of Highways, N. C. Department of Transportation

North Carolina Department of Agriculture, and Region N Council of Governments

We are enclosing herewith for your use in preparing a final environmental statement a copy of the comments of the North Carolina Department of Natural and Economic Resources, consisting of a memorandum signed by Dr. Arthur W. Cooper, Assistant Secretary for Resource Management, with attached Memorandums to Dr. Cooper from the Office of Water and Air Resources and the Office of Forest Resources, and a letter to you from the Wildlife Resources Commission.

The Division of Health Services, Department of Human Resources, indicated by letter of July 25, 1973, that the agency has no suggestions for revision of the subject documents or inclusion of additional information.

The Division of Historic Sites and Museums, Department of Cultural Resources, indicated by Memorandum of August 1, 1973, that no properties on the National Register of Historic Places or properties currently under consideration for the National Register will be affected by the project. Dr. Joffre L. Coe of the Research Laboratory of Antropology was given an opportunity to review the subject documents to determine whether possible aboriginal archaeological sites would be affected, but he has not identified any such sites.

No comments on the subject documents have been submitted to this office by the North Carolina Department of Transportation, the North Carolina Department of Agriculture, or the Region N Council of Governments.

We request that you furnish us two copies of your final environmental statement to be retained for public inspection at the Office of State Planning Library and at the Regional Clearinghouse for Multi-County Planning Region N.

Sincerely yours,

RANDOLPH HENDRICKS
Planning Coordinator

RH: pg

#### STATE OF NORTH CAROLINA

# DEPARTMENT OF NATURAL AND ECONOMIC RESOURCES

Box L"oc

Raleigh 27611



JAMES E. HARRINGTON SECRETARY TELEPHONI AREA CODE 319-8-9-4984

September 17, 1973

MEMORANDUM

TO: Randolph Hendricks

FROM: Art Cooper

SUBJECT: Bryant Swamp Environmental Impact Statement

# Environmental Setting

Page 3, paragraph 4 - What are the specific repercussions on land use as a result of the project? Most of the increase is in pasture and "other." Are more cattle to be raised. What is "other"? These questions are somewhat covered in page 7, paragraph 1, but the coverage is inadequate. Specifically, what will the project mean to the watershed in terms of land use changes? The effects of such changes should be detailed not only in terms of natural science, but in terms of the long range effect on the economic and social systems involved. Such repercussions as increased inbanization and industrialization (alluded to on page 9, paragraph 1) will have a profound effect on the sponsors and the citizens in the watershed.

included here for clarification. The reader may not have access to the Wildlife Service Circular 39.

Page 6, paragraph 1 - See comments from the Wildlife Resources Commission. They disagree with the statement that Bryant Swamp Canal "is considered a marginal feeder-type fishing stream." The Wildlife Commission categorizes Bryant Swamp Canal as one of the ten best fishing streams in the Lumber-Shallotte Watersheds.

Page 6, paragraph 2 - The sanctuary value of the wetlands mentioned here should be considered in light of the Wildlife Commission comments.

Memorandum to mandolph Hendricks Page 2 September 17, 1973

Page 7, paragraph 3 - The first sentence in this paragraph is meaningless without some description of the measures installed. This information says little about the degree to which effective and necessary land treatment neasures have been implemented. At the most, this information reveals a poor record of local initiative in adopting necessary land treatment measures and suggests that future action, if left to the landowners, will also be insufficient to make full use of the proposed project. Consideration should be given to requiring appropriate and necessary land treatment measures of the sponsors. Some mechanism is needed to insure such actions materialize.

Page 7, paragraph 5 - After a field investigation of the watershed which included discussions with landowners and after review of the North Carolina Forest Service management records with landowners, the Senior Staff Forester in charge of Cooperative Programs concluded that, "only a limited number of landowners in the watershed are interested in managing and improving their forest resource." He added, "This somewhat parallels the adoption of soil and water conservation plans." These conclusions further support the suggestion that land treatment measures should be required of the sponsors by SCS.

General Comment - Because of the probability that land treatment measures will not be effectively installed by local sponsors, the environmental impact statement should discuss the degree to which the claimed project benefits will be realized with the installation of structural measures only.

#### Water and Related Land Resource Problems

Page 8, paragraph 5 - According to interviews with local merchants, there are only three stores in Bladenboro which receive significant damage from flood waters. Only one of these sustains regular damage and that one, the Red and White Food Store, has been destroyed by fire and the owners plan to relocate it. The damages suffered by this store account for the majority of all damages suffered.

Page 9, paragraph 1 - Specifically, which industrial prospects have rejected Bladenboro for lack of adequate drainage on building sites? Have there been other reasons as well?

Memorandum to Randolph Hendricks Page 3 September 17, 1973

Page 10, paragraph 2 - Bladenboro's "storm sewers" consist of one principal outlet located on Main Street in front of the Red and White Food Store. A small diameter pipe then carries the run-off to the main channel behind the store. Inadequate removal of storm water must also be attributed to inadequate storm sewers and not simply inadequate flows in the main channel. The environmental impact statement should discuss this problem and comment on the impact of improving the storm sewers. Such discussion would be appropriate in the list of possible alternatives.

Page 11, paragraph 3, 4, 5 - There is no indication that the subject project will in any way lessen the social problems or alleviate most of the economic problems described here. At best it has been described by A. D. Little and Associates in their "Report on Channel Modifications," Volume II, that PL 566 projects have resulted in the improvement of certain farm incomes. With reference to page 4, last paragraph, at least one farmer, perhaps several, who own 500 acres, may receive up to 10% of the total farm benefits. How many of the farms benefited are 400 acres or more? What is the maximum benefit, in dollars, that will accrue to any single individual upon completion of the project? Another aspect which is not considered is the marginal nature of benefits to different size farms. The larger farmer may have more capital to take advantage of the project, thus putting him in a better competitive position than he was prior to the project. This situation could possibly increase the plight of the small farmer.

Page 12, paragraphs 1 and 2 - There is no assurance that the measures described will be carried out. Further, this quantity of land treatment appears to be extremely small on the more than 4,000 acres of cropland in the watershed. Isn't the main purpose of the project the carrying out of land treatment measures of agricultural lands?

Page 12, paragraph 8 - The effectiveness of sediment traps is not documented and therefore the use of the word "minimized" in the first sentence of this paragraph should be changed to reduced. The traps should be described in detail. Also, they should be cleaned out when full, not only when construction is complete. Maintenance of the project, including the cleaning of sediment traps, is the responsibility of the local sponsors and cannot be waranteed by the Soil Conservation Service. Some mechanism is needed to insure that maintenance is carried out in an effective manner if the project is to fulfill the speculative benefits projected for this project.

Memorandum to Randolph Hendricks Page 4 September 17, 1973

Page 13, paragraph 6 - It should be made clear that no "downstream damage" is contingent upon future developments downstream. Addition peak and stage resulting from future urbanization and/or drainage projects in the area may result in damage and the increased discharge from this project may supply an incremental portion of such damage.

Page 13, paragraph 7 - It is apparent to anyone who is familiar with the current patterns of urban development that the mere identification of a flood plain is not effective in stopping such activities. The conclusions drawn by the SCS is that distribution of a flood plain map will limit flood plain development. This is ridiculous. Field investigations of the project area have revealed that flood plain encroachments are occurring and in some cases the construction is taking place within a few feet of proposed laterals in the anticipation of future flood-free conditions. Some of this development is being done by members of the local flood protection corporation. SCS should give consideration to requiring Bladenboro to adopt appropriate floodway regulations and making project construction contingent upon this action. Consideration should also be given to the effect of increased urban development and subsequent run-off and sedimentation which may be stimulated by the project. What will this do to the effectiveness of the project and possible damages downstream?

Page 14, paragraph 3 - Floodwater damages of significance affect only a few stores in Bladenboro and as was pointed out earlier, the store suffering the preponderance of damage has been destroyed by fire. Increasing farm income on the 140 farms in the watershed depends heavily on the degree to which land treatment measures are implemented on these farms. It has already been pointed out that the current and proposed levels of such treatment appear inadequate.

Page 14, paragraph 4 - This statement should be documented.

Page 14, paragraph 5 - In the Preliminary Draft Environmental Statement the SCS described the increase in sediment resulting from the project construction as follows:

Sediment traps installed during construction is estimated to trap 930 tons (equivalent to 7 inches over 1 acre) annually. With the sediment traps installed, sediment is expected to be delivered into Big Swamp at a rate of 640 tons annually immediately following construction. This rate of sediment will decrease for a period of three years down to 336 tons (equivalent ... 2.5 inches over 1 acre) annually. It is estimated that the channel system will be stabilized at the end of the three-year period and the sediment into Big Swamp will level off at about 336 tons annually.

Memorandum to Randolph Hendricks Page 5 September 17, 1973

Was the deletion of this material from the subject draft environmental statement prompted because SCS deemed it to be inaccurate? The above description is more meaningful in assessing sediment damage on Big Swamp than the material in the subject draft statement. If this earlier material is inaccurate, then revised total sediment loads should be included in the final environmental statement with some explanation of the reason for any variances with the original figures quoted above.

The North Carolina Wildlife Resources Commission states in their comments that these sediment loads cannot be absorbed by Big Swamp without causing significant damage. They describe Big Swamp as one of the better fishing streams in Robeson County.

The fact that levels of sediment up to 25mg/liter show no harmful effects on fishery resources does not indicate the effects of increased turbidity on the stream's ability to metabolize organic matter from the Bladenboro Sewage Plant. What are the effects on dissolved oxygen, plankton productivity, and BOD?

Page 15, paragraph 1 and 2 - See comments of the Wildlife Commission, which disagree with the content of these paragraphs.

In an open-space recreation plan prepared for Region N Council of Governments, June 1973, by Geoffrey McLean and Associates, acquisition of Big Swamp as a regional park is listed as the third priority in terms of open-space needs of regional significance. The plan stated that Big Swamp was a unique wetland resource containing bear, deer, and waterfowl. Consideration of this plan should be given in the EIS.

Page 15, paragraph 4 - The creation of the eight jobs described here are inconclusive estimates. The local flood protection corporation has thus far provided no funds for project maintenance and cannot be required to do so by SCS, therefore the two part-time positions are speculative. The SCS has stated in correspondence dated January 30, 1973, to this Department that the predicted creation of the seven remaining positions was derived by the use of "employment multipliers, developed through input-output research studies." These studies should be described in detail in the final environmental statement. It should be noted that A. D. Little report mentioned earlier in these comments did not describe the creation of new jobs such as those discussed here in the study of two similar PL 566 projects in North Carolina.

Memorandum to Randolph Hendricks Page 6 September 17, 1973

General Comments - The construction of the subject project prior to completion of the proposed Bladenboro sewage treatment plant will further contribute to degradation of water quality of Big Swamp because of the increased flows resulting from channelization.

There will be some reduction in the growth on trees located in the forested flood plain below station 418+00 as a result of increased flooding during the growing season. This will be due to the increased stage brought about by the channel modifications.

# Favorable Environmental Effects

#8 - As previously mentioned, this is highly speculative.

# Adverse Environmental Effects Which Cannot Be Avoided

#4 and #5 - See attached comments of the Office of Forest Resources.

# Alternatives

This section is entirely inadequate in its treatment of alternatives to the structural measures included in the project as proposed. The SCS has ignored several alternatives and persists in taking the simplistic view that alternatives are to be considered separate and isolated from one another rather than in combination.

The final environmental impact statement should discuss the following additional alternatives:

construction of off-stream channels
clearing and snagging
vertical drainage wells
flood plain zoning
public acquisition of flood prone lands
flood proofing
investment of project funds and distribution of interest to landowners

These alternatives should be considered in combination with each other and in combination with those measures included in the draft EIS. They should be discussed in detail.

Memorandum to Randolph Hendricks
Page 7
September 17, 1973

SCS should consider the combination of flood plain zoning in certain areas plus levying of certain laterals (lateral 7, for example, which causes the bulk of the flooding problems in Bladenboro) plus clearing and snagging of that portion of Bryant Swamp upstream from Bladenboro plus hand removal of sediment from other laterals plus requiring comprehensive land treatment measures on upstream laterals plus selective channelization of Bryant Swamp Canal below Bladenboro plus floodproofing of existing structures located in the flood plain.

# Short-Term Uses and Long-Term Productivity

Page 19, paragraph 5 - As mentioned previously, such a statement is highly speculative and present controls are not adequate to insure this effectiveness.

Page 19, paragraph 6 - What is the upper limit to the percent of tributaries and stream channel that can be modified withous seriously affecting downstream environments? If the Bryant Swamp project is carried out, will it tend to preempt another, perhaps more needed project in the future? Consideration of long-term, interagency water resource planning should be mentioned in environmental impact statements if they exist. If they do not exist, problems which may arise in the future should be given thorough coverage in this section of the EIS.

# Appendix A - Benefits and Costs

It is suggested that the figures presented in this section be better defined. This would alleviate the problem of searching through the body of the EIS to determine what the figures mean.

# Appendix B - Project Map

It is suggested that the Type 7 wetland habitat be included on the project map.

Attached are full comments from the Wildlife Commission, the N. C. Forest Service, and the Office of Water & Air Resources.

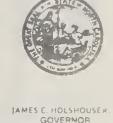
Attachments D-18

#### STATE OF NORTH CAROLINA

# DEPARTMENT OF NATURAL AND ECONOMIC RESOURCES

Box 27687

Raleigh 27611



TAMES E. HARRINGTON SECRETARY TELEPHONE AREA CODE 919-829-4984



August 9, 1973

# MEMORA ND UM

N O DEPT OF NATURAL & A THE OF BEING YES

TO:

Arthur W. Cooper

FROM:

Lyell E. Hicks

SUBJECT:

Bryant Swamp Watershed, Bladen County

I reviewed the drafts of the Work Plan of Bryant Swamp Watershed, Bladen County and the accompanying Environmental Statement.

The major portion of the 9,670 acres of forested land is located upstream from the terminus of the proposed channel modification both on the main stem and the lateral branches of Bryant Swamp Creek.

The Tupelo Gum-Cypress forest type which is probably the type most susceptible to damage from channel modification occurs on a very limited acreage. The flood plains of the main stream and branches above Bladenboro is narrow. The flood plains below the town widen considerably but the main channel was excavated some 35 years ago. The swamp hardwood and bottomland hardwood types in the flood plains have been heavily logged in the past and the trees in the present stands are generally smaller and of lower quality. The proposed watershed measures, therefore, will have little or no effect on most of the forest. The composition of the stand, the rate of growth of the trees, and the forest management practices required to maintain or improve the forest resource will be essentially the same with or without the project.

A rather limited examination of the forested areas and review of N. C. Forest Service management records indicates that only a limited number of landowners in the watershed are interested in managing and improving their forest resource. This somewhat parallels the adoption of soil and water conservation plans. The Work Plan states that approximately one-fouth (26%) of the 140 farms have farm plans and that only 43% of planned measures have been applied to date.

Memorandum to Arthur W. Cooper Page 2 August 9, 1973

The Watershed Plan included a list of alternative solutions to the problem. The Less Intensive Land Use alternative and the conversion of crop land to pasture and forest considers only the benefit to certain wildlife species. The economic returns from the growth and harvest of forest products and other forest resource benefits must be included when considering this alternative use.

Adverse effects on the forest resource will be:

- (1) Irretrievable loss of 96 acres of prime swamp hardwood and bottomland hardwood sites. This area is required for the channel and spoil bank rights-of-way.
- (2) Irretrievable loss of growth on the trees on the 90 acres which will be liquidated for debris disposal for some 20 to 30 years or the period required for the new stand to reach comparable size and density.
- (3) Some reduction in the growth on trees located in the forested flood plain below station 418+00 as a result of increased flooding during the growing season. This will be due to the increased stage brought about by the channel modifications.

Only adverse effect #1 above is noted in the Environmental Statement on page 20. The other two should be added.

L. E. Hicks, Senior Staff Forester

Cooperative Programs

# STATE OF NORTH CAROLINA

# DEPARTMENT OF NATURAL AND ECONOMIC RESOURCES

Box 27687

Raleigh 27611



JAMES E. HOLSHOUSER, JR GOVERNOR

JAMES E HARRINGTON SECRETARY TELEPHONE ARIA CODE 919 829-4964

In reply refer to: WRPL/JRW

September 10, 1973

#### **MEMORANDUM**

TO:

Secretary, Department of Natural and Economic Resources

Attention: Mr. Thayer Broili

FROM:

Director, Office of Water & Air Resources

SUBJECT: Bryant Swamp Watershed Environmental Statement and Work Plan

The Office has reviewed the Environmental Impact Statement and Work Plan for Bryant Swamp Watershed and has the following comments:

- l. The associated flood plain management measures should be discussed in greater detail and brought out as a major component of the Work Plan. Also, it is not clear exactly what measures if any will be taken, other than simply informing local people of remaining flood hazards at least once a year. Measures taken yhould not be limited to the urban area of Bladenboro.
- 2. It is noted that there is no reference to the possible or potential effects of the project on the ground water resources of the area in the environmental statement. This plan, as the others in the Coastal Plain, stresses "water management" and yet ignores the potential for actual long-range water management. Investigation of possible vertical drainage and conservation of water by artifical recharge of the artesian aquifer or improvement of natural recharge conditions was not accomplished and probably not considered. The proposed plan does not provide or consider water-level control structures in the channel system.
- 3. A site for a proposed wastewater treatment plant to serve the Town of Bladenboro, which is in the vicinity of the southwest City limits, has been approved by this Office and Permit No. 2697 for the construction and operation

Secretary, Dept. of N. & E. Res. Attention: Mr. Thayer Broili

- 2 -

of the tertiary type 0.5 MGD wastewater treatment facilities was issued April 13, 1973. The discharge of the treated effluent from this plant into Bryant Swamp will greatly improve water quality.

No objections from a water quality standpoint are indicated in connection with this project.

fc



August 17, 1973

D. JACK HOOKS, WHITEVILLE
CHAIRWAN
W. K. ANDERSON, NEWLAND
NORMAN DENNING, FOUR OAKS
T. N. MASSIE, SYLVA
DR. LATHAN T. MOOSE, WINSTON-SALEM

CLYDE P. PATTON, RALFIGH
EXECUTIVE DIRECTOR
ROBERT G. SANDERS, CHARLOTTE
ROSCOE D. SANDLIN, JACKSONVIL
JAY MAGGONER, GRAHAM
O. L. WOODHOUSE, GRANDY

Mr. Jesse L. Hicks State Conservationist United States Department of Agriculture Spil Conservation Service Post Office Box 27307 Raleigh, North Carolina 27611

Dear Mr. Hicks:

The Commission has reviewed the advance copies of the Bryant Swamp Watershed Work Plan and the Draft Environmental Statement that accompanied your letter of July 12 addressed to Mr. C. P. Patton.

Our principle concern over the Bryant Swamp project is, and always has been, the adverse effects upon the fish populations in lower Bryant Swamp and upon those of Big Swamp below the confluence of these streams. The Commission also is concerned over the destruction of some 50 acres of wetland wildlife habitat in the vicinity of Bladenboro as well as the loss of some riparian wetland habitat upstream from your Station 338+50.

The first sentence on page 15 states: "According to a report by the North Carolina Wildlife Resources Commission, the fishery resources in the watershed is of low to negligible value." Here the distinction must be drawn between "fishery resources" --which imply the fish populations present -- and "fishery" -- which implies current harvest. The Commission did comment in a letter to the Soil Conservation Service under date of April 20, 1967 that "The overall fishery in the main stem of Bryant Swamp is not significant because of prior channelization and periodic pollution from Bladenboro." This statement applied to the harvest, not to the resource. During the survey and classification of the Lumber River conducted in 1961, the Commission sampled Bryant Swamp at the SR-1178 bridge -- a point well within the reach proposed for channelization. In that survey, Bryant Swamp not only was ecologically classified as a "Redbreast Warmouth" type of stream (not a feeder stream as stated in the subject draft) but it

was also listed among the "Ten Best Fishing Streams of the Lumber-Shallotte Watersheds." A well balanced fish fauna was obtained in this sample which led to the conclusion: "At the time of this survey, this stream had an unexploited fishery with the principle game fishes being warmouth, redfin pickerel, bluegill, and pumpkinseed. This stream can only be fished from the bank using a cane pole or small spinning gear inasmuch as the cover vegetation is profuse." The Commission maintains that just because the fishery resources are not being exploited, this fact does not necessarily mean that these resources are of negligible value as stated in the subject draft.

The Commission also questions the third sentence of page 15 that refers to the lower mile of the proposed floodway: "Only one side of the channel will be disturbed to minimize effects on the fishery resource." The reader quite understandably infers from this statement that not more than one half of the existing fish habitat would be destroyed and the remaining half would be left exactly as it now is. However, as was well illustrated in Figure 8-2 (c) on page 338 of the Report on Channel Modifications, prepared by Arthur D. Little, Inc. for the Council on Environmental Quality, the so-called "One Bank Excavated" type of channel excavation involves cleaning the entire stream bottom as well as one bank -- only one bank being left undisturbed "for aesthetic purposes and to provide for wildlife habitat." One side of the Bryant Swamp channel would not be left undisturbed in the floodway reach, as stated on page 15 of the subject draft, but merely one bank and the destruction of fish habitat would be far greater than that implied by the term "minimized."

Concerning the sediment traps mentioned in the final sentence of the first paragraph on page 15 of the subject draft, the Commission finds no answer in the draft to the question posed by the Fish and Wildlife Service in their comments upon the Bryant Swamp Project addressed to the Soil Conservation Service under date of March 23, 1971: "We are interested in the results of creating potholes in the floodway as a means to reduce turbidity and sedimentation in downstream areas. Please keep us advised on the outcome of your experimentation." Downstream sedimentation, particularly in Big Swamp, resulting from turbidities created by project construction is the chief concern of the Wildlife Commission. Big Swamp is one of the better fishing streams of Robeson County and supports excellent populations of largemouth bass, bluegill, redbreast sunfish, chain pickerel and redfin pickerel. It could not absorb without significant damage the 5,500 tons of additional sediment that channel construction was estimated to "temporarily" deliver according to the USDA Environmental Statement for the Bryant Swamp Project under date of March 16, 1971. It is noted that the subject Draft Environmental Statement (p. 14) now states the project-created sediment in terms of "average annual concentrations" of 13 mg/l and ultimately stabilizing at 8 mg/l. These unsupported estimates mean very little in terms of how much sedimentation will accrue in the lower reach of Bryant Swamp and in Big Swamp from project construction.

The adverse effects of the Bryant Swamp Project upon the fishery resources are totally summarized in the subject draft by the statement (p. 16): "Damage one mile of marginal feeder-type fishing stream." This, the Commission contends, is a masterpiece of understandment.

Much the same degree of minimized values also applies to project effects upon wildlife. The statement is made on page 15: "Fifty acres of wetland habitat in and near Bladenboro will be lost or will have a reduced value as wetland habitat as a result of channel modifications." The concept that the wetland habitat will be destroyed has been dropped on the following page where adverse project effects are summarized: "Reduce the value of 50 acres of low value wildlife wetland habitat." The 50 acres in question have been classified as "low value" because they are near a population center and receive only limited use by waterfowl populations. "Limited use" seems to be judged in terms of hunting pressure which is stated to be nine hunter days annually. The fact that these wetlands, being adjacent to a population center, might have a high sanctuary value to many forms of wildlife is not mentioned.

In summary, the Commission believes that the adverse project effects upon the fish and wildlife resources of the Bryant Swamp Watershed have been grossly undervalued in the subject Draft Environmental Statement.

Very truly yours

Robert B. Hazel

Assistant Executive Director

FFF:en

Jennie D. Arnold Conservation Chairman Horace Kephart Group Sierra Club Box 1644 Fayetteville, NC 28302

Mr. Jesse L. Hicks
State Conservationist
United States Department of Agriculture
Soil Conservation Service
P. O. Box 27307
Raleigh, NC 27611

Subject: Bryant Swamp Watershed, Draft Environmental Impact Statement and Watershed Work Plan.

Dear Mr. Hicks:

In response to a request by Mr. Robert Finch, formerly Environmental Statement Coordinator for the Department of Natural and Economic Resources, we're sending a commentary on the Draft Envoronmental Impact Statement and Watershed Work Plan for Bryant Swamp. We sincerely hope that this commentary will be helpful to you when preparing the final Environmental Impact Statement.

The enclosed comments were drawn from both the Environmental Impact Statement and the Watershed Work Plan (which, for the sake of brevity, are referred to in the comments as EIS and WWP, respectively) and page numbers have been included for reference. Comments are based entirely upon the information included in these two documents. The commentary is divided into three sections, (1) economic, (2) environmental, and (3) summary and conclusions.

Again, we hope this commentary will be helpful to you.

Sincerely yours,

Jennie D. Arnold

Conservation Chairman

# I. Economics of the project.

The discription of the economic benefits of the project as given in the WWP is confusing and, in some cases, seems to be contradictory. Generally speaking, the possible benefits of this project seem to be greatly exaggerated, both in terms of any immediate economic benefits, such as jobs at the construction site, or any long-term benefit, such as flood control. Other benefits which are mentioned seem to have little to do with the project at hand.

The major benefits of the project, as outlined in the WWP are supposed to be flood protection for the town of Bladenboro, improvement of marginal farmlands and increase of profit in farming operations, and general economic improvement for the area.

According to the statement, "The degree of protection given to Bladenboro will give the greatest marginal net return on the cost of improvements" (WWP, p 13). Using the given figures, the annual urban damage occurring in Bladenboro is \$8,100, plus damage to roads and streets of \$1,990, making total annual damages of \$10,090. The per-year average damage of the three large floods cited as having occurred in the last nine years is about \$6,278, making a total of \$16,368 in annual flood damage. The channelization project would supposedly prevent 38% of this damage, or about \$6,220 annually.

Comparing these figures with the figures given for cost of construction and maintenance of the project, it hardly seems that the prevention of flood damage in Bladenboro can be cited as a major benefit, especially when one considers other aspects of the project, such as the possibility of increasing flood damage further downstream by increasing the rapidity of the runoff in the watershed area as a result of channelization.

Another benefit cited in the WWP would be improvement of farmlands located in the area. The figures given for land uses before and after the project (WWP, P4) show a decrease in cropland of 0.4%, a decrease in woodland of 3.0%, an increase in pasture land of 2.1% and an increase in "other" of 1.3%. It would hardly seem that the project would be justifiable merely to increase the amount of available pasture land. These figures seem to be contradictory with the cited objectives of the project.

It is a very noticeable omission from the statement that nowhere have the dollar figures for the benefits of the project been qualified, which leaves some doubt as to their accuracy. Percentages of damage reduction have likewise been quoted without qualification.

Any long-term economic benefits resulting from the project (p 21, WWP) seems to be greatly exaggerated. The creation of two permanent part-time jobs will hardly have a noticeable effect on the economy of Bladen County. As for jobs created during the construction project, it has been found

in the past that such temporary employment often does more harm than good to the persons hired, since the workers tend to incur financial obligations which they cannot continue to fulfill after the job is over, and are oftentimes left worse off than before.

In short, the statements that "new jobs and incomes generated by the project will make a significant contribution to the standard of living" and "fewer families will leave their communities, migrating to cities, in search of opportunity and a higher standard of living" (WWP, p 21) is sheer hyperbole. No watershed project, no matter how beneficial, could possibly accomplish all that in Bladen County.

It is stressed in the WWP that the success of the project depends upon the continuation of land treatment measures by individual land owners. It is stated (WWP, p 23) that "Landowners will install the planned land treatment measures", and, further down on the same page that "cost of installing land treatment measures will be provided by individual landowners concerned". Nowhere is any provision made for a plan whereby the cooperation and participation of the landowners would be assured before the project is actually begun. Even though the major expense of the landowners "will be in the form of value of labor and use of farm equipment", it should be realized that this type of "in kind" cost represents a real cash outlay which cannot be ignored. If the state of poverty of the local landowners is as critical as the social commentary in the WWP indicates, it may be possible that the individual landowners will not be able to bear the cost of treatment measures. It does seem that this eventuality should be further investigated and explained in the WWP.

# II. Environmental effects of the project.

From an overall point of view, the EIS given for this project does not seem to be either adequate or complete, since there are several important questions which remain to be answered concerning the project.

The most obvious question is: What effect will this project have on downstream flooding? As it presently exists, Bryant Swamp is catching and holding water and releasing it slowly. Albeit detrimental to some local farms, it seems that it would be worth considering whether this function is not in itself a very worthwhile use for this particular land area.

It hardly seems fair to increase the productivity of a few farms in one given area to the detriment of others downstream.

It would be wise, too, to consider not only this particular channelization project, but the cumulative effects of a number of such projects. Continuing to channelize the small streams of our state in an effort to drain farmlands could result in severely damaging floods in areas closer to the coast. Nowhere in the EIS is this possibility dealt with.

The statement does not contain adequate information regarding damages caused by construction. It is stated that 90 acres of wooded land will be cleared for debris disposal, and that "these ninety acres will revert back to woodland in the future" (WWP, p21) but the statement gives no plan as to how this is to be accomplished. This omission leads one to believe that this means, in fact, that the woodland will more than likely revert to scrubland.

The EIS fails to mention the adverse environmental effects which would occur when it becomes necessary to employ a dragline to clear the channel some years from now, or damages which might occur as a result of routine maintenance of the project.

No consideration is given to the purely aesthetic results of converting a free-flowing stream into a canal edged with a pile of debris and spoil, but judging from the cross-section diagram shown in the WWP, the visual results of the project will no doubt be gruesome, to say the least.

#### III. Summary and conclusions.

In examining any project of this type, there are two major questions which need to be answered: (1) Is the project really necessary? and (2) Is the project environmentally sound?

In the case of the Bryant Swamp Watershed Plan, it does not seem that either of these questions has been adequately answered. In terms of the information given in the WWP, the project seems to be of marginal value from an economic standpoint, especially since the cost-benefit rates quoted is unqualified and open to considerable question.

The possible adverse effects of the project are not adequately discussed in the EIS. The greatest possible danger, that of increasing the possibility of downstream flooding by providing rapid run-off through channelization, has nowhere been mentioned in the EIS. No adequate plan has been provided for restoring woodland damaged by project construction and debris disposal. Aesthetic considerations are nowhere mentioned.

The EIS fails to mention what cumulative effect this project might have when combined with similar projects, if any, already constructed or planned for the Pee Dee River Basin. The consideration of cumulative effects of this and similar projects is a matter of extreme importance, since it is a known fact that channelization tends to contribute to downstream flooding. If all such projects in a large drainage system are not considered together, the results could be catastrophic.

Certainly it would seem worthwhile to consider the thought that the pocosins and small, slow-moving and unchannelized streams of our state are performing a valuable function in that they do hold water for long periods of time and release it very slowly. If it were not for these natural holding ponds, the damage caused by flooding would be considerably greater. The continuation of drainage and channelization projects ad infinitum could have the very dangerous result of robbing us of this natural protection. Even though some short term benefits might seem to accrue through improvement of some farmland, the eventual long term results might prove disastrous. It is imperative that such long-term results be examined before embarking on an irreversible "improvement" which might well prove to be no improvement at all

# LEAGUE OF WOMEN VOTERS OF NORTH CAROLINA

P.O. BOX 5121 . RALEIGH, NORTH CAROLINA 27607

PHONE: 782-2346

October 4, 1973

Mr. Jesse L. Hicks State Conservationist P. O. Box 27307 Raleigh, N. C. 27611

Dear Mr. Hicks:

Thank you for the advance copy of the Bryant Swamp Watershed Work Plan and Draft Environmental Statement.

I am turning them over to the League Environmental Quality Chairperson, Mrs. D. G. Sharp, 307 Granville Roa Chapel Hill, N. C. 27514.

Thank you.

Sincerely,

Betty Wiser (Mrs. E. H. Wiser) President, League of Women Voters of North Carolina

BW: meg

D-31

#### Directors

1205 E. Wright Rd. Greenville, N. C. 27834 30 Aug. 1973

Mr. Jesse L. Hicks State Conservationist Soil Conservation Service P. O. Box 27307 Raleigh, N. C. 27611

I have reviewed the Impact Statement for Bryant Swamp (Bladenboro). The following observations represent my reactions to the draft statement and may be of interest to S.C.S.

This statement is generally well organized and presented. The discussion of alternatives (pp. 17-18) is particularly helpful in putting the project in perspective.

Although supporting data is meager, project design seems to be aimed at reducing streamborn sediments, debris, and other materials delivered downstream and beyond the confluence of the project itself. Ending the channel modifications well upstream from the confluence with Big Swamp and restricting the berm to one side only (p. 15) in the lower mile should help reduce sediment discharge markedly while preserving some wetland habitat.

# WATER CHEMISTRY

There is no direct comment concerning possible changes in water chemistry! Faster runoff of rainfall may be expected to increase the amounts of soluble "algae stimulating" nutrients (especially soluble forms of nitrogen) delivered to Big Swamp, Pesticides and other residues from cropland, city streets, and other sources may also increase. These harmful effects may be partially reduced by extensive use of tile to replace ditches (p. 9) and anticipated improvements to the Bladenboro Sewage Treatment Facility. Still some baseline water chemistry data - - - BOD, dirual D.O.'s, nitrogen, etc. should be obtained for future comparison and management purposes. Such studies are important because of cumulative storage of nutrients in the estuaries which finally receive most of the dissolved and suspended matter transported by the stream. In this instance, the flow route is via the Pee Dee into Winyah Bay near Georgetown, S. C. It is unlikely that the Bryant Swamp project could have any measurable effect on this estuary - - - more than one-hundred miles downstream yet the statement (p. 19) that ... "eight (P.L. 566) applications make up approximately 45-4% of the drainage area of the Lumber River. Works of improvement have been completed on one tributary with 2,2% of (the) drainage area;" causes me to wonder what the future cumulative effects might be. No mention is made (p. 19) of proposed projects by private individuals or other agencies (eg. Corps of Engineers).

# LONG RANGE DRAINAGE SYSTEM PLANNING

There must be some upper limit to the % of tributaries and streamchannel that can be modified without seriously affecting downstream environments. As yet we can only make vague guesses at the actual %. As this value is approached, it will become less and less economically feasible to carry out a small watershed project of the type currently carried out under PL 566. These projects must be co-ordinated by all agencies involved and thruout an entire river system (in this case the Pee Dee); before the true environmental impact can be determined. Priorities must be set. If the Bryant Swamp project is completed now, will it tend to preempt another, perhaps more needed project, in South Carolina ten years hence? This type of long-term, interagency, interstate planning is now essential and should at least be hinted at in impact statements.

#### GENERAL COMMENTS

p. 5 work plan --- At least one farmer, perhaps several, who own 500 acres will each receive 10% of the total farm benefits. How many of the farms to be benefitted are of 400 acres or larger? What is the maximum benefit, in \$, that will accrew to any single individual upon successful completion of the Bryant Swamp Project?

work plan

p. 5 # 3 Have these stream classifications been adjusted recently? N. C. Air & Water issued new, generally upgraded classifications for many streams during the summer of 1973. List the reference and date of classification used in reports and impact statements as those are subject to revision and it is necessary to know their current status.

- p. 15 #3 Impact Statement - need statement from Drs. Bell, Radford or others at UNC that no endangered species are threatened by this project. I wonder if the N. C. State Museum, Conservation Council of N. C. and/or the N. C. Academy of Sciences (Conservation and Legislation Committee) should not provide such statements.
- p. 16 Impact Statement Data on sedimentation is hidden in the body of the statement.
- (pp 9 5mg/1 present turbidity
- p. 14 13mg/1 during construction p. 13 8mg/l after stability

Specify actual amounts in summary. On p. 19-20 it is stated that - - - "increase in sediment delivered to Big Swamp - - - will not have a cumulative significant impact" - - -This is a judgement. Your actual data, not presented at this point (p. 19-20) shows a 50% increase in sediment delivery even after project stability is reached (three years). Such data should be included in all summaries. The fact that levels of sediment up to 25mg/1 (p. 14) show no harmful effects on "fishery resources" . . . does not indicate

the effects of increased turbidity on the streams ability to metabolize organic matter from the Bladenboro Sewage Plant. What are the effects of increased turbidity on Dissolved oxygen, plankton productivity, and B.O.D.? Will this project reduce the permissible discharge from the present /and/or proposed Bladenboro Sewer Facilities?

p. 16 Impact Statement

Specifically what types of temporary and permanent vegetation "for stabilization" are proposed. Cudzu has often been used to the eventual detriment of property owners! Will N. C. Wildlife Commission supervise wildlife plantings?

p. 19 Impact Statement

This detention pool for high stage floodwater is an excellent idea - - it will also serve as a sediment trap!

p. 15 Impact Statement

Who will clean out sediment traps? How frequently? Won't this increase turbidity estimates?

#### GENERAL SUMMARY

This is a very good Impact Statement. As is typical with S.C.S. statements it is narrow in scope and does not adequately account for all downstream effects (eg. water chemistry, possible effects of turbidity on B.O.D.) nor for eventual cumulative effects as more and more of the river drainage system is modified. My own view is that the Bryant Swamp project will result in some very tangible benefits for the people of Bladenboro - - - (sewage treatments, use of tile by farmers, and floodplain zoning). The environmental cost of this one project seems to be loss of some marginal wildlife habitat and possibly one more straw on the camels back of eutrophication.

Sincerely

/s/ Vincent J. Bellis

Vincent J. Bellis 1205 E. Wright Rod. Greenville, N. C. 27834

(Note: original letter was handwritten.)



